BURR REMOVER FOR MULTIPLE STRIP FORMING DEVICES

Filed May 27, 1941

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BURR REMOVER FOR MULTIPLE STRIP FORMING DEVICES

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Application May 27, 1941, Serial No. 395,483

9 Claims. (Cl. 90—25)

This invention relates generally to the method and mechanism of slitting relatively wide metal strip to form a plurality of narrower strips which are coiled on reels or spools, and relates more particularly to an intermediate step, prior to winding the different narrow strips on separate spools or coils, and as a part of a continuous running process, for removing burrs and featherly sharp edges or projections from the edges on opposite sides of adjacent narrow slitted strips, without scratching or otherwise defacing the surface on either side of the strip.

One of the objects of this invention is to provide an improved device for removing a burr or feathered edge which may be formed on either side or face of a strip, or at either edge of strip or sheet metal formed as a result of a die cutting or disk shearing, sawing, punching, stamping or slitting operation. The burr or feathered edge remover is of such a character that it is capable of a varied and wide application, in that it may be readily applied to single strips of any width that require that only one or two edges be trimmed. The device may also be applied to burried or feathered layers removal irrespective of the particular manner or operation by which the burrs or feathered edges are produced. The device is particularly well adapted for use in removing burrs formed on the edges of opposite faces of adjacent strips where, for example, a plurality of strips are formed by a slitting operation from a wider strip, by disk-like cutters.

A further object is to provide a burr or feathered edge remover of a type which is not likely to scratch or scar, or otherwise deface the main surface or finish of the strip or sheet, from the edges of which the burrs or feathered edges are being removed.

In the drawings one selected embodiment is shown for purposes of illustration.

Figure 1 is a top plan of a general arrangement showing the relative position of the burrie or feathered edge removing device interposed as a step in the continuous process of forming a number of narrow strips from a single width strip by circular cutters and winding the narrow strips in separate coils.

Figure 2 is a front elevation of Figure 1.

Figure 3 is a top plan of the burr or feathered edge removing device showing its adjustable mounting and lateral strip guides as the strip passes over the series of arcuate burr trimming edges, on a concave burr trimming plate.

Figure 4 is a side elevation of Figure 3 showing more clearly the spreading or separating function of the burr trimming member, as edges on opposite faces of alternate adjacent strips are guided over the burr trimming teeth on the upper and lower face, respectively, of the strip spreader and trimmer.

Figure 5 is a side elevation of Figure 4 showing the concave burr removing plates, the staggered and alternating disposition of the strips thereon, the lateral strip guide pins and the deflecting or spreading function of the burr removing device.

Figure 6 is a side elevation showing a modified form in which tangential contact of the burried or feather edge of the strip with the trimming edge is obtained without scratching or otherwise marring the surface of the strip, by employing spaced triangular files and their angularly disposed sides and angularly disposed trimming teeth thereon.

Figure 7 is a broken fragment looking in the direction of the arrows and taken on line VII—VII of Figure 2 showing the cutting or slitting roll or disks in elevation and the strips in section, the two offset strip sections at the left illustrating more clearly the formation of the projecting burr or feathered edge upon the edges of opposite sides of adjacent strips.

Figure 8 is a side elevation of a broken fragment of a file indicating the angular disposition of the cutting edges or trimming ridges on one face or side of the triangular file and also indicating in dotted lines a varied angular disposition of the trimming edges which may be employed.

In the illustrative drawings, the process of forming a plurality of narrow strips from a single wide strip is shown as including strip slitting means, designated generally as A, a burr or feathered edge remover or trimmer, designated generally as B, and a plurality of strip colling or wind-up reels, corresponding in number to the number of narrow strips that are formed from the single wider strip, designated generally as C.

The strip slitting means A receives a relatively wide single strip of stock I from a coil 2 of the stock which is rotatably supported in a manner well known in the art in a suitable reel box 3.

An enlarged fragment of the strip slitting means is shown in Figure 7 as including a plurality of disk cutters 4, 4 spaced on an arbor 5, and a plurality of cooperating disk cutters 5, 6 spaced on an arbor 7, the disk cutters 4 of one set, for example, interfitting within the spaces 8, 9 formed between the spaced disk cutters 6 on the arbor 7. The perimeters of the disks overlap and the strip enters at the point or line of intersection of the arcs. The width of the face of the disks depends on the width of the strips cut.

The cutting or slitting is accomplished by the overlapping circumferential portion of the interfitting disk cutters which causes a shear-like slitt-
ting action to take place, which may leave burred or feathered edges 9, 10 projecting from the edges on opposite sides of the adjacent narrow strips 11, 12, respectively. That is, the burred edges 9 extend downwardly from the edges of the bottom face of the narrow strips 11 which are forced upwardly by the circumferential surface of the disk cutters 4, and the burried or feathered edge 10 extends upwardly from the edges of the upper face of the narrow strips 12, which are forced downwardly by the circumferential surface of the disk cutters 4. The disk cutters 4, 5 are formed of suitable material, finish and hardness in a manner well known in the art, to withstand long periods of continuous slitting service. The composition, character and physical properties of the strip material which is sheared may vary, in accordance with service and the use required of the same.

The shearing disks may be power driven by any means well known in the art. As shown, the arbors 5, 7, carrying the cutting disks 4 and 6, respectively, are rotatably supported in the frame 13 of the strip slitting unit A. The driven power shaft 14 is on the arbors 5, 7 and also rotatably mounted in the frame of the unit, and are power driven through the belt 16 from the main power drive shaft 17, which in turn is driven by a suitable source of prime power unit such as a motor 18 through a suitable speed reduction unit 19.

A preferred form of strip shearing means has been shown, other forms may be used which leave burred or feathered edges which may be removed by the burr removing mechanism herein referred to.

One preferred form of burred and feathered edge removing means is shown in Figures 3, 4 and 5, in which the effective trimming tool or cutting edge is provided by a plate 20 concave or arcuate in form, and the provision of a series of trimming teeth or edges 21 extending laterally of the plate, and also laterally or across the burred or feathered edges to be trimmed. Preferably the laterally disposed trimming edges 21 are arcuate in form, as indicated in Figure 3, as said teeth extend laterally across the concave face of the plate from one side to the other. As indicated in Figure 3, the active and effective trimming or cutting edge of the arcuate teeth 21, would be to the right, or on the convex side of the arcuate teeth, with the movement of the strips 11, 12 being from the right to the left, as indicated by the arrow in Figure 3.

While one preferred form of strip shearing means is shown in Figures 3, 4 and 5, in which the effective trimming tool or cutting edge is provided by a plate 20 concave or arcuate in form, and the provision of a series of trimming teeth or edges 21 extending laterally of the plate, and also laterally or across the burred or feathered edges to be trimmed. Preferably the laterally disposed trimming edges 21 are arcuate in form, as indicated in Figure 3, as said teeth extend laterally across the concave face of the plate from one side to the other. As indicated in Figure 3, the active and effective trimming or cutting edge of the arcuate teeth 21, would be to the right, or on the convex side of the arcuate teeth, with the movement of the strips 11, 12 being from the right to the left, as indicated by the arrow in Figure 3.

One advantage of such a relation of parts is that the burred or feathered edge is trimmed off without scratching or defacing the finish of the surface or face of the strip because, as more clearly indicated in Figure 5, by reason of the concavity of the plate with the arcuate trimming edges 21 on the inner concave face of the plate 20, all portions of the surface or face of the strip 11 are spaced or separated from the plate 20 except that portion which is in contact with the burred or feathered edges 9 of the upper strip 11, or with the burred edges 10 of the lower strip 12 on the side under or run of the burr remover.

The relation between the formed trimming edges 21 and the direction of movement of the strips 11, to the left as indicated in Figure 3, and the burred edges 9, is such that the movement of the strips 11 and 12 serves to urge the deposits of the accumulated fine residues of the removed burred or feathered edges outwardly of the strip, through the grooves or recesses between adjacent arcuate teeth, which are tilted or angularly disposed in the direction of movement of the strip. Under such conditions, there also results from the frictional trimming engagement of the movement of the burred edge 9 and the forwardly arched cutting edge 21, a later side force or thrust tending to deflect or urge the strip 11 to the sides of the trimming plate 20, normal to the direction of movement of the strip. Such laterally acting forces acting in opposite directions are substantially balanced when the components of the frictional reactive forces between the burred edge 9 and the trimming teeth 21 on the plate 20 are substantially the same. Such reactive forces will vary with the difference in the character of the burred and feathered edge 11 and the cutting edge 21, but under such unbalanced laterally acting forces, the deflection or lateral movement of the strips 11 is resisted by the pin guides 22 mounted adjacent the strips 11 on the burr remover body frame 23 at the entry edge or side thereof, and by similar cooperating guide pins 22, mounted adjacent the strip 11 on the body frame 23 at the point where the strip 11 leaves the burr remover.

If the cutting or trimming edges 21 are arched in the opposite direction, relative to the direction of travel of the strip, so that the trimming edge is effective on the concave side of the laterally extending arcuate teeth 21 on the concave plate 20, the severed or removed residue of the burred or feathered edges 9 or 10, would tend to be carried centrally of the strip 11 and plate 20 (instead of outwardly toward the strip edge) in the grooves between adjacent raised cutting or trimming edges 21. In like manner, the lateral component of the reactive forces effective between the burred edge 9 on either edge of the strip and the concave trimming edge 21 would tend to urge the edge centrally of the strip 11 or plate 20 in a direction opposite to that previously considered with the teeth 21 arched laterally of the convex plate in the opposite direction. If desired, a longitudinally extending slot or lateral grating may be provided in the body frame 23 as a means of disposing of any accumulated mass of the particles removed or trimmed from the edges 9 of the strip 11. The guide pins 22 and 22 would also serve to prevent lateral displacement in the movement of the strips over the trimming edges.

One of the outstanding advantages of a concave plate 20, with the series of laterally extending but angularly inclined trimming edges 21 disposed on the concave surface is that only the burred edges to be trimmed are brought in contact with, or are tangent to the trimming edge at one point or along one line of contact, with the angularly disposed trimming plate. This arrangement minimizes, if it does not eliminate, the likelihood of scratching or injuring the face of the strip.

The same advantage may be obtained by a modified structure as shown in Figure 6 where a plurality of files 24 triangular in cross section are mounted in spaced relation on the body 23 of the burr remover. The files 24 extend longitudinally of the strips 11 on the upper run of the strips, and also of the strips 12 on the lower run. The strips 11 and 12 and the files adjacent to the strips are disposed on the upper and lower faces of the body frame 23 of the burr removing member in alternating or staggered relation on the upper and lower face of the member lat-
erally thereof. The body portion 23 serves to function as a separator or spacing means which deflects the strips 11, 12 in planes above and below an intermediate plane disposed parallel in the normal line of travel of the strip on the leading and trailing edges of the body portion 23. Such a centrally disposed normal line of travel for the strip is indicated and illustrated in Figure 2 (see also Figure 1 in top plan) where a normal line of travel in a common plane for all of the narrow strips, leading to and from the burr remover, is established, together with a strip tension and pressure control means. For the above purpose there is provided a plurality of strip control means such as the screw clamps designated generally 29, 31 shown mounted on a support 27 by brackets or in any other suitable manner. The burr removing device is also preferably adjustable mounted on the support 27 in a suitable manner to permit vertical adjustability and also to permit rotary or angular adjustment of the burr removing means B. The guide blocks of the guide 25 are preferably so controlled as not to deface, embed or flatten the burred or feathered edges formed on the edges of the opposite faces or sides of adjacent strips. The burred or feathered edges 9 will extend downwardly from the edges of the bottom face of the strip 11 which has the upper position as it emerges from the slitting disks 4, 6 (see Figures 2 and 7), and the burred or feathered edges 10 will extend upwardly from the edges of the top face of the strip 12 which has the lower position as it emerges from the slitting disks 4, 6. In leading the strips 11, 12 to the burr removing means B through the guide 25, preferably the arrangement is such that the adjacent strips 11, 12 havin the burred and feathered edges on opposite faces or sides, and preferably the respective strips in opposite directions, will be conducted to the guide 25 and the burr remover so as to be in the same relative position as when the strips emerge from the strip slitting disks. In such a relative position the smooth upper face of the strip 11 would pass over the smooth surface of the upper guide block of the guide 25, and downwardly extending burred or feathered edges 8 of the strip 11 would be trimmed by the burr trimming edges or ridges 21 projecting from the upper side of the converging plate 20, triangle file 24 or other burr trimming means located on the upper side of the body frame portion 23 of the burr trimming means B. It is not thought necessary to set forth in detail the similar manner in which the adjacent lower strip 12 having the burred or feathered edge on the upper face or side thereof, is guided and travels over the burred trimming edges disposed on the under side of the body 23. It may be noted, however, that with respect to the strip 12 passing over the burr trimming edges on the under side of the body 23, that as the burred or feathered edges are severed and removed from the strip edges, and if they find their way outwardly laterally and clear of the strip, they would fall by gravity so that there would not be the likelihood or tendency to accumulate a mass of the removed residue of burrs from the edges.

The various strips 11 and 12 are brought to a common plane and line of travel by the guide plates of the strip pressure control clamp 25, in which the strips 11, 12 converge to a common plane substantially in alignment with the point or line of divergence of the strips from the control guide 25. The strip pressure control clamp is formed from a normal straight line of travel between the two guides by substantially half the width of the burr remover body frame portion 23, which serves as a separator or spacing means for alternate strips.

The extent of deflection of either the upper run of the strip 11 or of the lower run may be varied by shifting the body portion 23 of the burr remover up or down in the slot 30. Still another means of modifying the degree of lateral deflection or separation of the runs of the strips 11, 12 is by the angular tilting or rotation of the body frame 23. Such an adjustment is not a mere difference in degree of deflection because the altered deflection produces and results in a change in longitudinal strip tension which effects an increase in the lateral pressure exerted between the trimming edges and the burred or feathered edges of the strip. A further characterizing distinction in the action and resultant arising from an angular adjustment of the body 23 by rotation about the axis of the stud 28, is that a varying amount of pressure is exerted on the trimming edges which are disposed at or deflected to different distances from the normal line of strip travel as heretofore defined. To a certain extent the cutting or trimming function can be transferred to a different area or different teeth. This may be of advantage in the event of the dulling of certain edges, or in the event that certain notches between the toothed ridges become clogged.

Other adjustable features may be employed, for example, when the spaced triangular files are employed, having the spaced parallel ridges of cutting teeth disposed laterally and at various angles as desired, relative the longitudinal axis of the strip, adjustable means may be employed for setting those files of the triangular file 31, lateral distances apart, so as to modify the effective trimming area, character of the cutting action and different widths of strips. One advantage of the spaced triangular file arrangement, which provides a plain base portion 31 without any cutting teeth or ridges disposed between adjacent files, is that such a form is well adapted for trimming one edge only of the strip, where occasion requires. Under such a condition the single burred or feathered edge of the strip engaging the angularly disposed trimming ridges extending on the inclined file side in the correct direction would tend to urge the strip laterally in a direction toward the burred edge until the unburred or plane edge travels over to the central base portion 31 which has no cutting ridges.

In certain respects, the arrangement employing the triangular files is capable of being employed in a flexible manner by slight adjustment and rearrangement of the files, and the trimming ridges on the upper and lower side of the trimmer body 23 to meet different conditions, such, for example, as strips of different lengths. If desired, as a factor which may be utilized to meet varying requirements, the individual files
may be adjustably mounted and be provided with trimming edges on the three sides, which may differ as to character of the trimming edge, angular disposition and spacing of the trimming ridges, on the face of the file which engages the strip at only one point; that is, the point or line of tangency with the burred or feathered edges of the strip.

After the burred and feathered edges have been trimmed from the edges of the strips, the strips are called on separate reels or spools 31, which are shown rotatably mounted in the reel stand or frame 32. Suitable guide rolls 33 may be disposed at suitable points to support and guide the strips to their particular colling reel. The strip colling reel 31 may be positively driven by any of the conventional means well known in the art for colling wire or strip material and for maintaining suitable tension in the strip as it travels from the strip tension and pressure control clamp 26.

One modified form of the invention might be that one employing flat plates disposed at a suitable angle to each other in a manner similar to that shown in Figure 6, instead of using a triangular file or similar file, accurate trimming teeth or edges may be provided on both sides of each plate so that the plates could be reversed when one side was worn or became dull. The angular disposition and spacing of the plates and character of the arc-like trimming edge may be varied as desired and to meet particular conditions.

While one preferred and modified form has been shown for purposes of illustration, it is understood that various changes, modifications and adjustments may be made by the person skilled in and familiar with the art, without departing from the spirit and scope of the invention as hereinafter claimed.

I claim:

1. In a device for removing burrs or a feathered edge from edges on opposite faces of adjacent strips simultaneously, means including strip deflecting means adapted to spread the strips in different planes and guide the strips on opposite sides thereof, burr removing means on the upper and lower face of said spreading means adapted to remove the burrs or feathered edges projecting from the face of the strip at the edge thereof, said burr removing means including a trimming edge or ridge tangent to the edge to be trimmed and so arranged as not to scratch or damage the surface of the strip and including a file-like surface presenting a series of cutting ridges extending laterally of the strip, the cutting edges for opposite sides of the strip being inclined in opposite directions, strip guiding means for the strips leading to said burr trimmer, said strip guiding means being arranged at such a position that the feed of the strip is substantially in line with the central axis of the strip deflecting means whereby the strip is fed to the strip deflector at an angle to the normal line of strip travel and under a regulated tension due in part to the deflecting action of the strip deflector causing a yielding pressure engagement of the burred or feathered edge of the strip with the trimming edge of the burr removing means and in a direction laterally of the strip, a further strip guiding and pressure control means for the strip leading from the burr trimmer to deflect the strip to the normal line of travel in alignment with the guide for the strip on the face of the deflector adjacent the strip to prevent lateral displacement of the strip in its travel over the burr removing means, said lateral strip guiding means including a plurality of pins disposed on the strip spreader at the entry and leaving ends of said guide adjacent each edge of the strip whereby the burred or feathered edges on opposite faces of adjacent strips are separated by the strip spreader so as to enable said oppositely disposed burr or feathered edges to be simultaneously removed.

2. In a device for removing burrs or a feathered edge from edges on opposite faces of adjacent strips simultaneously, means including strip deflecting means adapted to spread the strips in different planes and guide the strips on opposite sides thereof, burr removing means on the upper and lower face of said spreading means adapted to remove the burrs or feathered edges projecting from the face of the strip at the edge thereof, said burr removing means including a trimming edge or ridge tangent to the edge to be trimmed and so arranged as not to scratch or damage the surface of the strip and including a file-like surface presenting a series of cutting ridges extending laterally of the strip, the cutting edges for opposite sides of the strip being inclined in opposite directions, strip guiding means for the strips leading to said burr trimmer, said strip guiding means being arranged at such a position that the feed of the strip is substantially in line with the central axis of the strip deflecting means whereby the strip is fed to the strip deflector at an angle to the normal line of strip travel and under a regulated tension due in part to the deflecting action of the strip deflector causing a yielding pressure engagement of the burred or feathered edge of the strip with the trimming edge of the burr removing means and in a direction laterally of the strip, a further strip guiding and pressure control means for the strip leading from the burr trimmer to deflect the strip to the normal line of travel in alignment with the guide for the strip on the face of the deflector adjacent the strip to prevent lateral displacement of the strip in its travel over the burr removing means, said lateral strip guiding means including a plurality of pins disposed on the strip spreader at the entry and leaving ends of said guide adjacent each edge of the strip whereby the burred or feathered edges on opposite faces of adjacent strips are separated by the strip spreader so as to enable said oppositely disposed burr or feathered edges to be simultaneously removed.

3. In a device for removing burrs or a feathered edge from the edge of a metal strip, burr removing means adapted to remove the burrs or feathered edges projecting from the face of the strip at the edge thereof, said burr removing means including means for deflecting said strips out of line from leading and trailing guides above or below the line of support or guiding means leading to or trailing from said burr remover, means for removing any burred or feathered edge from the edges of the outer face of said strip as it is drawn over said strip deflecting means including a plurality of triangular files mounted on the strip deflector means in spaced relation longitudinally of the strip, strip guiding means for the strips leading to said burr trimmer, said strip guiding means being arranged at such a position that the feed of the strip is substantially in line with the central axis of the strip deflecting means whereby the strip is fed to the strip deflector at an angle to the normal line of strip travel and under a regulated tension due in part to the deflecting action of the strip deflector causing a yielding pressure engagement of the
burried or feathered edge of the strip with the trimming edge of the burr removing means and in a direction laterally of the strip, a further strip guiding and pressure control means for the strip leading from the burr trimmer to deflect the strip laterally of the strip to prevent lateral displacement of the strip in travel over the burr removing means, said lateral guiding function for the strip leading from the burr trimmer being performed by the inclined faces of the triangular file independent of other lateral strip guide means, the angular disposition of the cutting edges being such that its trimming functioning engagement with the burried or feathered edge on either side of the strip there will be exerted a lateral component in a direction centrally of the strip tending to prevent sidewise displacement in the travel of the strip over the burr trimming edges, the centralizing lateral component of force acting upon the edge on opposite sides of the center line of the strip serving to balance each other.

4. A device for trimming burred and feathered edges as defined in claim 3 and including a smooth base guide stop at the base of the functioning portion and extending between adjacent burr trimming surfaces of the burr trimming serrations to limit the cutting or trimming action on one edge of the strip and prevent undue narrowing thereof.

5. A burred and feathered edge trimming means as defined in claim 2 and including means for adaptably mounting the strip deflector bar carrying the burr trimming means to permit rotation thereof in a vertical plane about a horizontal axis so as to vary the tension in the strips leading to and from the deflector or spreader bar and to vary the pressure and extent of engagement of the strip with the burr removing edges, and reel-up means for coiling the strips and maintaining the strips under constant tension.

6. In a device for removing burrs or a feathered edge from the edge of a metal strip, means including burr removing means adapted to remove the burrs or feathered edges projecting from the face of the strip at the edge thereof, including a plate having a serrated burr trimming edge and a plate bar turning about an axis extending longitudinally of the strip, said burr trimming surface presenting a series of trimming teeth extending laterally of the plate surface, the laterally extending trimming teeth being slightly arched in a horizontal plane toward one end of the concave burr removing plate whereby the engagement of the edges on opposite sides of the strip with the burr trimming edge of the respective burr trimming surface serves to urge the edges of said strip in continuous functioning contact relation with the burr trimming edge.

7. In a device for removing burrs or a feathered edge from the edge of a metal strip, means including burr removing means adapted to remove the burrs or feathered edges projecting from the face of the strip at the edge thereof, said burr remover including means for deflecting said strips out of line from leading and trailing guides, means for removing any burred or feathered edge from the edges of said strip as it is drawn over said strip deflecting means, a cutting edge or ridge over which the burred or feathered edge is drawn, said cutting edge extending laterally of the strip and being inclined at an acute angle to the face of the strip, the cutting ridges forming an acute angle with a horizontal plane and extending above and below the strip so as to narrow the strip surface whereby the engagement of the edges on opposite sides of the strip with the burr trimming edge of the respective burr trimming surface serves to urge the edges of said strip in continuous functioning contact relation with the burr trimming edge.

8. A device for removing burrs or a feathered edge from edges on opposite faces of adjacent strips, means including strip deflecting means adapted to spread the strips in different planes and guide the strips on opposite sides thereof, burr removing means on the upper and lower face of said spreading means adapted to remove the burrs or feathered edges projecting from the face of the strip at the edge thereof, said burr removing means including a plurality of triangular files mounted on the strip deflector means in spaced relation longitudinally of the strip, the cutting teeth on the files being angularly disposed so as to urge the strip during the trimming of the burried or feathered edges centrally of the strip, strip guiding means for the strips leading to said burr trimmer, and pressure control means to vary the tension of the strips in accordance with the pressure desired between said strips with the burr remover, said strip guiding means being arranged at such a position that the feed of the strip is substantially in line with the central axis of the strip deflecting means whereby the strip is fed to the strip deflector at an angle to the normal line of strip travel and under a regulated tension due in part to the deflecting action of the strip deflector causing a yielding pressure engagement of the burried or feathered edge of the strip with the trimming edge of the burr removing means and in a direction laterally of the strip, a further strip guiding means for the strip leading from the burr trimmer, means for adjustably mounting the strip deflector carrying the burr trimming means so as to vary the tension in the strips leading to and from the deflector or spreader bar, and reel-up means for coiling the strips and maintaining the strips under constant tension.

9. A device for removing burrs or feathered edges from the edges of a metal strip including burr removing means adapted to simultaneously remove the burrs or feathered edges projecting from the face of the strip at each edge thereof, and including a plurality of plates each having a file-like trimming surface, each plate surface being disposed at an acute angle relative the bottom face of the strip so as to present but a single line of tangency between the plate surface and the strip edge to be trimmed, each file-like trimming surface of each plate including a series of laterally extending cutting ridges or teeth disposed at an acute angle to the edge of the strip at the point of contact of the trimming teeth and the strip edges whereby the engagement of the moving edges of the strip with the burr trimming teeth of each of the plates serves to urge the edges of said strip in continuous functioning relation, and whereby the separated and trimmed burrs from the edges are disposed below the strip and between the lower end of each angularly disposed plate from which place the separated trimmings may be readily removed.