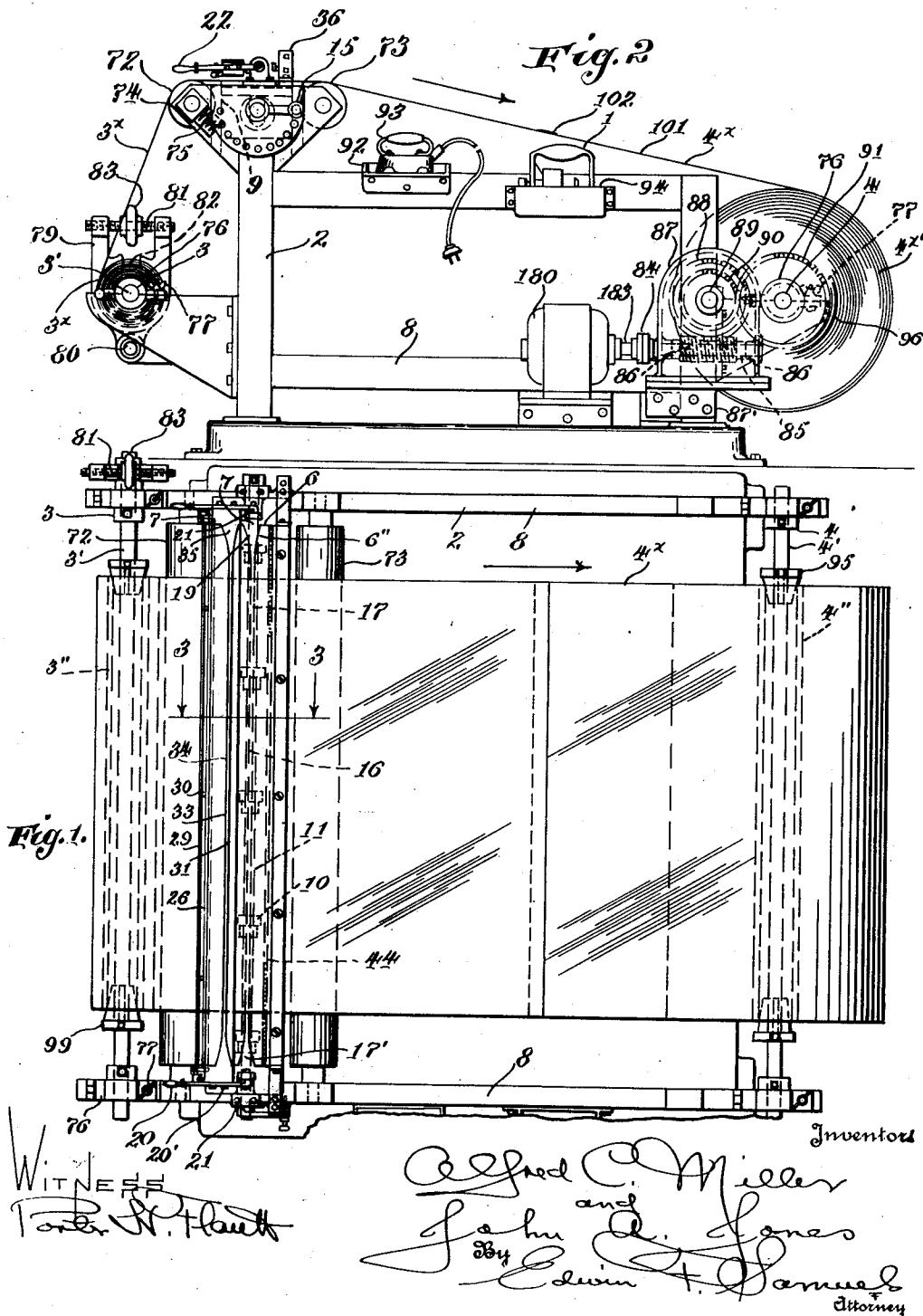


Nov. 3, 1936.

J. A. JONES ET AL  
MACHINE FOR TRIMMING AND SPLICING THE  
WASTE ENDS OF PAPER AND SIMILAR WEBS  
Filed April 8, 1936

2,059,873

3 Sheets-Sheet 1

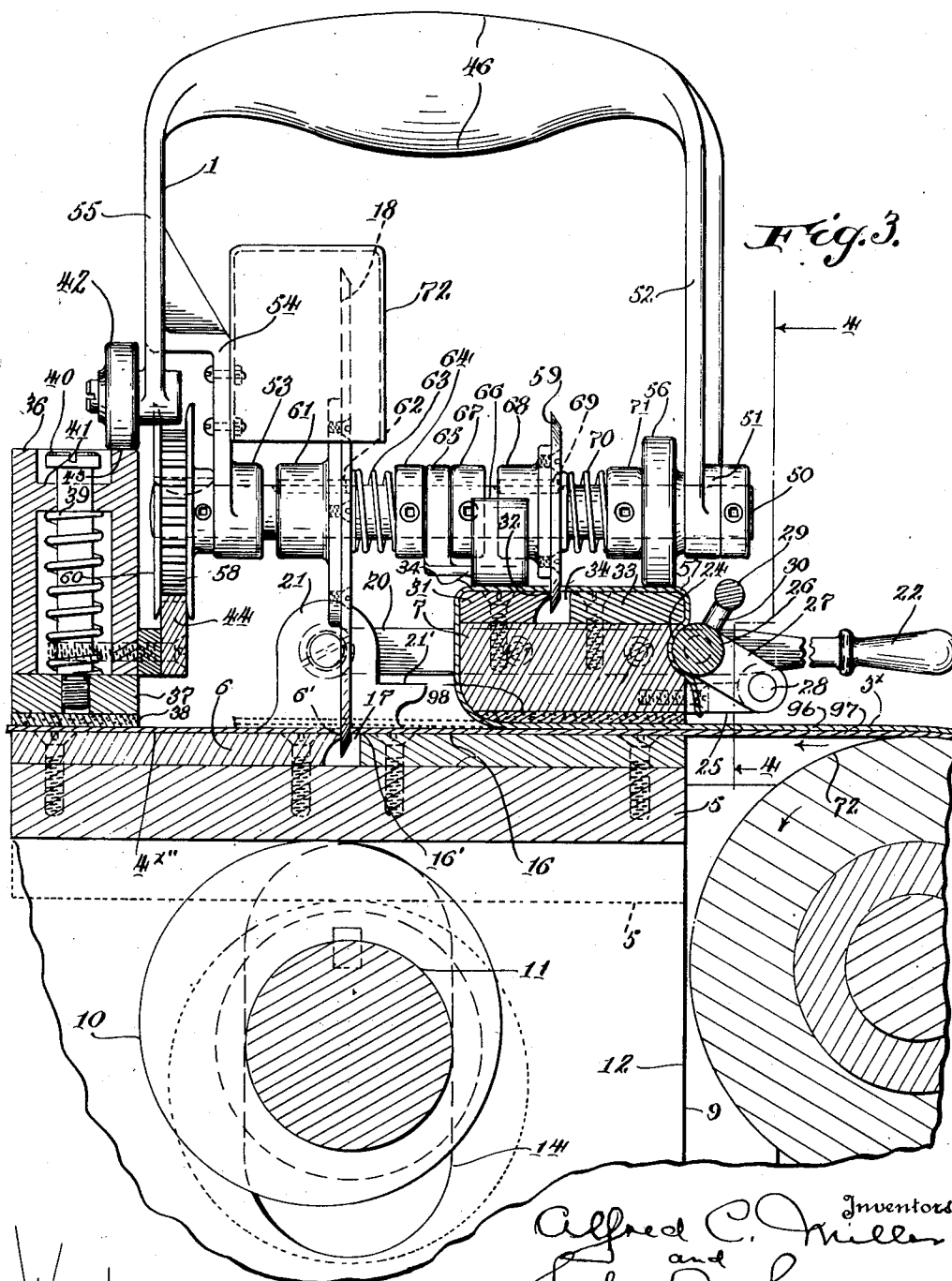


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3 Sheets-Sheet 2



WITNESSES  
T. H. F. Lamb

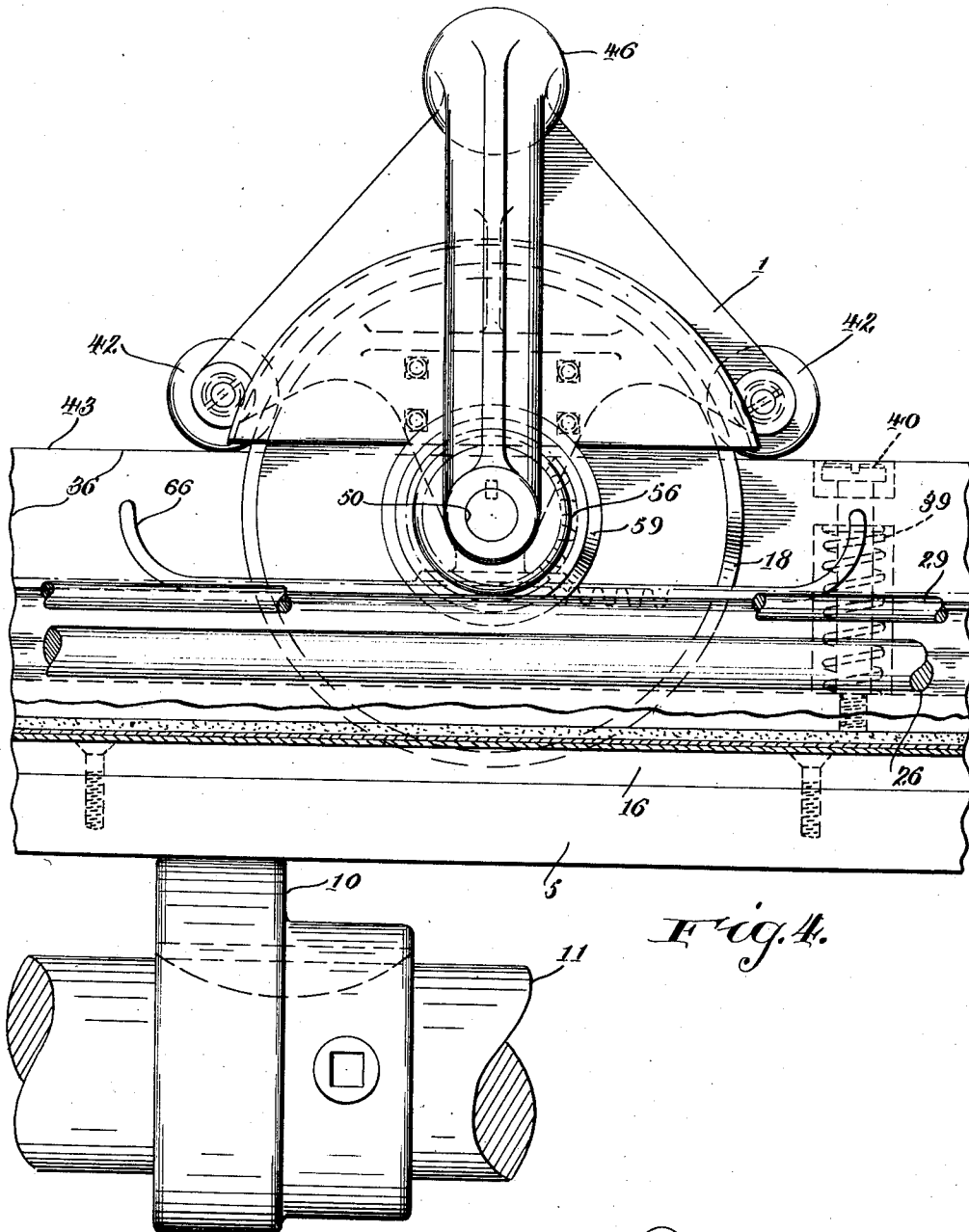
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3 Sheets-Sheet 3



WITNESSES  
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## UNITED STATES PATENT OFFICE

2,059,873

MACHINE FOR TRIMMING AND SPLICING  
THE WASTE ENDS OF PAPER AND SIMI-  
LAR WEBSJohn A. Jones and Alfred C. Miller,  
Baltimore, Md.

Application April 8, 1936, Serial No. 73,382

17 Claims. (Cl. 164—77)

The invention relates to a web trimming and splicing machine for use in cutting or trimming and splicing the waste ends of paper rolls used in printing newspapers or the like in order that these may be formed into a single continuous web, adapted for use in printing after the manner of the respective webs from which the waste ends are obtained. While the machine is particularly adapted for use in this way and has been devised for this purpose, it is also adapted for use in joining the waste ends of other webs used for other purposes, of paper and other materials. By the use of this machine an important economy is effected which is very large in its proportion to the cost of the installation.

In the accompanying drawings, we have illustrated a machine embodying the invention in the preferred form, the design of the machine as to numerous details being subject to variation within the broader scope of the invention.

In the drawings:

Figure 1 is a top plan view of the machine with the cutter carriage removed.

Figure 2 is a side elevation of the machine with the web in the position which it assumes after splicing, the splice having moved forward in the direction of rolling the combined web onto the take up roll.

Figure 3 is a section through the table on the line 3—3 in Figure 1, showing the cutter carriage and other parts and also the web ends in the position which they assume in the cutting operation. This view is on a relatively enlarged scale.

Figure 4 is a view looking from the right in Figure 3 showing the web in section on the line 4—4 in said figure, the table, the eccentric shaft and other members running across the machine being shown fragmentarily in elevation, the view being on the scale of Figure 3.

Referring to the drawings by numerals, each of which is used to indicate the same or similar parts in the different figures, the machine as shown comprises a cutter carriage 1, a frame 2, having at one end supporting bearings 3 for the waste end roll or let off shaft 3' for the waste end roll 3'' and at the other end, bearings 4 for the take up shaft 4' to which are secured the rolls 4'' which carry the product in the form of a continuous spliced web 4x. The frame 2 also carries intermediately of the roll bearings 3 and 4, a transversely extending relatively elevated table 5 to which the stationary cutter 6 is secured and on which the swinging cutter bar 7 is mounted. The frame 2 comprises side frames 8 at each side of the machine on which the table 5 is

mounted at its ends in vertical guides 9. The table 5 is supported on a plurality of eccentrics 10 which are secured to the transverse shaft 11 shown in section in Figure 3, the table being in turn provided with depending guide plates 12 which are slotted vertically at 14 to provide for motion of the table relatively to the shaft and to assist in guiding the table. The eccentrics are operated to raise the table when desired as hereinafter described, by means of a hand crank 15. The upper position of the table 5 and the eccentric 10 are shown in full lines in Figure 3, the lower position of each being shown in dotted lines.

The cutter 6 extends across the machine from side to side and is provided with a cutting edge at 6' which cutting edge is preferably undercut as shown for convenience in grinding and to provide a single contact at the edge. The undercut arrangement shown prevents deflection of the moving cutter out of contact with the edge 6' in case the cutting edge should be ground back beyond the plane of the main body of the cutter below the cutting edge. In accordance with the construction shown, the cutting edge extends across the machine at right angles or substantially at right angles to the direction of feed being curved at its ends away from the plane of cutting as shown at 6'' in Figure 1 to guide and admit the cutter 18.

Opposed to the cutter 6 is a cutting plate 16, see Figures 2 and 3. This is spaced backwardly from the cutting edge 6' toward the let off or waste end roll 3' to provide a cutting slot 17 for the entrance of the moving cutter or knife 18. At its lateral ends, the front edge 16' of this plate 16 is curved backwardly at 19 to locate and admit the moving cutter or knife 18 to be further described, as it enters the slot and approaches the locality of cutting. The side ends of this slot 17 are indicated at 17'.

The cutting bar 7 in the form of the invention shown, is mounted on the frame to rest with its full weight on the web which is supported on the table. The cutting bar as shown is connected to the frame and guided by hand levers 20 which are pivotally mounted at one end on brackets 21 secured to the side frames 8 at each side of the machine so that it can be swung upwardly from the table. This cutting bar 7 extends from one lever 20 on one side frame across the machine, being secured at its ends to each said lever 20 intermediately of the length of said lever 20, in any suitable manner, as by means of screws 20'. At their opposite ends from the brackets 21, the

levers 20 are provided with handles 22 by which they are operated. When the table 5 is lowered as described, the levers 20 contact stops 21' on brackets 21 whereby the bar 7 is suspended above the table. The rear side of the cutting bar 7, as shown, the feed and take up being to the left in Figure 3, is grooved longitudinally at 24, said groove being referred to as a clamping groove, and the bar 7 is provided at its ends with brackets 25 on which is supported a clamping rod 26 which extends across the machine, being mounted at each end in a lever 27. Each lever 27 is pivotally mounted at 28 in the rear end of the corresponding bracket 25 and the clamping rod 26 has its ends secured to the swinging end of the corresponding lever 27. The clamping rod 26 is operated by a handle 29 shown in the form of a rod extending across the machine and secured to the clamping rod 26 by short arms 30.

The cutting bar 7 carries on its top surface, suitably secured thereto, a cutter 31, having an undercut edge 32 extending across the machine and closely resembling the cutting edge 6' and a cutting plate 33 corresponding to the cutting plate 16, the cutter and plate being spaced apart providing a cutting slot 34 corresponding to the cutting slot 17. This slot is flared at its ends at 35, this flare being similar to the flare or enlarged opening 17' of the cutting slot 17.

Cooperating with the table 5 and extending across the machine and secured at its ends to the side frames 8, we have shown a presser bar 36 which is at the left in Figure 3. This presser bar as shown is of H shaped cross section and is provided at its bottom side with a relatively movable presser foot 37 extending across the path of the web 42 from side to side and having secured to its bottom surface, a pad 38 adapted to bear on the paper as more fully hereinafter described. The presser foot 37 is given a downward tendency and pressed against the web on the table 5 by means of springs 39 shown as coiled about the vertical studs 40 which extend downwardly through suitable holes in the cross arm 41 of the H shaped presser bar and are threaded at their lower ends into the presser foot 37. The springs bear at one end against the bottom surface of cross arm 41 and at the other end against the top of the presser foot 37. The springs 39 and screws or pins 40 are shown as five in number, spaced across the machine to apply a uniform downward tendency to the presser foot.

The rearmost top edge 43 of the H shaped presser bar 36 serves as a track on which the follower rolls 42, of the carriage 1, bear in operation as the carriage moves across the machine. The presser bar is also provided at its lower rear side with a toothed rack 44 extending across the path of web and suitably secured and spaced outwardly from the presser bar.

The cutter carriage 1, which is removable, being provided with a handle 46 by which it is moved and operated, though it may be actuated in any suitable manner, is best illustrated in Figures 3 and 4. The frame of this carriage 1, as seen in Figure 3, which is a section in a plane extending longitudinally of the web, is of inverted U shape, the handle 46 being the cross arm of the U. The cutter shaft 50, which in the operative position of the carriage extends longitudinally of the machine, i. e., in the direction of feed, has a bearing 51 at the lower end of the rear arm 52 of the U shaped carriage frame. The other bearing 53, near the forward end of the shaft is

supported in an offset depending bracket 54 on the forward arm 55 of the U shaped carriage frame. It may be noted in this connection that the rollers 42 are mounted at the lower end of the forward arm 55 of the carriage frame, and that the shaft 50 carries a roller 56 just inside the arm 52 which rolls on the paper web 57 where it overlies the cutting plate 33 carried by the cutting bar 7. The shaft 50 carries at its forward end, a toothed pinion 58 which in the operation of the carriage, engages rack 44 by which it is rotated. This pinion is secured to the shaft 50 and it operates the moving cutters or knives 18 and 59 as hereinafter described, the shaft being rotated by the motion of the carriage through said rack and pinion. To cause it to maintain the proper engagement, the pinion 58 is shown as provided with side flanges 60.

The moving cutter or knife 18 is carried on a boss 61 which is keyed to the shaft by means of a key 62 on which it slides and the knife 18 is pressed against the edge of the stationary cutter 6 in operation, by means of a spring 63 which is coiled about the shaft 50 and supported oppositely to the cutter by means of a collar 64 secured to the shaft.

The shaft 50 also carries a collar 65 loose on the shaft, to which collar a shoe 66, which runs on the paper web 34' where it overlies the cutter 31, is secured. This shoe has the effect of smoothing and holding the paper at the point of cutting and oppositely to the roller 56 and clamping the rod 26. The loose collar 65 rests on one side against the collar 64 and on the other side against the collar 67, likewise secured to the shaft, by which collars 64 and 67 the shoe is positioned.

The cutter 59 is carried by boss 68 which is connected to the shaft by key 69 on which the cutter is permitted to slide along the shaft and this cutter or knife 59 is pressed against the cutting edge 32 of the clamping bar cutter 31 by a spring 70 which is coiled about the shaft 50 bearing at one end against the cutter 59 and at the other end against a collar 71 secured to the shaft, against which collar 71 on the opposite side, the roller 56 also has a bearing. Both cutters 18 and 59 are shown as of the circular disk type.

It is also of interest that the hand of the operator is protected from the knife or cutter 18 by a casing or cover 72 which surrounds the upper arc of the cutter, being secured to the bracket 54 as shown.

Referring to Figure 2, it will be noted that the machine is provided with supporting rollers for the web indicated by reference characters 72 and 73 at the rear end front respectively of the table 5 and approximately on the level of the table and to provide the necessary degree of yielding and taking up, the rear roller 72 is mounted in bearings 74 which slide substantially at right angles to the arc of engagement of the roller with the paper, being supported by springs 75.

It is also of interest that the waste end or let off roll bearing 3 and also the take up or continuous web roll bearing 4 are made in halves with the upper section 76 hinged at one end and secured at the other end by means of a butterfly nut 77. This provides for removal and replacement of the shafts 3' and 4' for convenience in changing rolls or roll cores 3'' and 4''. To regulate the tension of the web in transferring from roll 3'' to roll 4'' after splicing and to prevent unrolling at other times, the roll shaft 3' 75

is preferably provided with a brake 79 shown as consisting of two brake shoe arms, one on each side of the shaft 3', pivotally connected at 80 at the bottom and drawn together at the top by means of a right and left-handed screw 81, operated by a hand wheel 83, the shaft 3' being shown as having secured thereto a brake drum or brake disk 82, engaged by said brake shoe arms.

In Figure 2 we have also shown an electric motor 180 for operating the take up or main roll 4'' whereby the spliced web 4x is drawn through the machine and formed into a roll 4x' to be transferred to a printing press or for any purpose for which it may be available, a completed splice being shown at 102 in Figure 2. The motor shaft 183 is connected by a suitable coupling 84 to a worm shaft 85 mounted in bearings 86 in a frame 87 mounted on a suitable bracket 87' on the side frame 8. This worm wheel operates a worm gear 88 secured to a shaft 89 which carries also secured thereto, a pinion 90 which meshes with a toothed gear 91 secured to the take up roll shaft 4.

Figure 2 shows the side frame 8 nearest to the observer as provided with a shelf or bracket 92 for a hand operated electric iron 93 which is similar to the flat iron or sad iron used in pressing. This figure also shows a shelf or bracket 94 on which the cutter carriage 1, with the various equipment it carries, may be placed when not in use, the carriage being removed by hand from the table after cutting and prior to the operation of splicing, being returned to its position on the table for the cutting operation when the splice has been moved forwardly and the next pair of ends to be spliced have been arranged for trimming or cutting as shown in Figure 3. The cutters may be otherwise arranged.

In the operation of the machine, the take up core or main roll 4'' preferably in tubular form, is first mounted on the shaft 4' which is removed from the machine for this purpose, the bearings 4 being opened as described by unscrewing the thumb nuts 77 and swinging the top bearing member 76 backwardly to release the shaft. The take up roll or roll core 4'' may be secured in any suitable manner as by means of cones 95 which are well known for this purpose. A waste end of paper web 4x'' wound on the core or roll 4' is placed in position on the machine, the top half 76 of bearing 4 being closed and the nut 77 tightened. For this purpose, i. e., in starting, a waste end of the kind being joined may be used. This waste end would be delivered to the machine wound on a tubular core or cylinder 4'', the same having preferably served as the core of the roll as it was presented for printing. The end 96 of the paper web 4x'' is then drawn backwardly to the table 5 which is lowered by turning the shaft 11 with the eccentric 10 thereon, see Figure 3. This has the effect of releasing the presser foot 37 permitting the end of the web 4x'' to be entered between the table and the presser foot and passed over the table. The paper being smoothly arranged under the presser foot and drawn flat, the table is then raised by the operation of the eccentric clamping the web 4x'' between the table and the presser foot. A waste end 3x on a roll core 3'' is then mounted on the let off shaft 3' which is removed for this purpose, the roll core being secured on the roll shaft 3' by means of cones 99 or in any suitable manner. The let off roll shaft 3' is then replaced in its bearing 3 after the manner of shaft 4'. At this time, the cutter bar 7 is raised and the clamping rod 26 is released

from the groove 24. The web 3x is drawn forwardly under the cutter bar 7 which preferably has a bottom pad 98 as shown. The web is then drawn upwardly on the front side of the bar 7 and backwardly over the cutter 31 and the cutter plate 33 which causes it to cross the slot 34. It is then drawn downwardly at the rear side of the bar, all of the slack being taken up. The clamping rod 26 being operated by the handle 29 is then forced downwardly into groove 24, being swung about the center 28, whereby the end edge of the web is clamped. At the time of clamping the cutter bar 7 is permitted to swing downwardly, resting by its weight on the two webs 96 and 97.

The cutter carriage 1 is then grasped by the operator who holds it by the handle 46 and moves it from the shelf 94 to a position on the table at either end beyond the ends of the cutters and plates 6, 16 and 31, 33. The pinion 58 on the shaft 50 of the cutter carriage 1 is at this time engaged with the rack 44, the rollers 42 being on the track 43 and the roller 56 in line with the waste end 3x where it overlies the cutter bar 7 at one side of the moving cutter 59, the shoe 66 being in line with the paper where it overlies the cutter bar on the other side of cutter 59. The knives or moving cutters 18 and 59 are at this time in the flared ends of the slots 17 and 34, the said knives being in their initial position prior to the cutting stroke 3 and the springs 63 and 70 partly expanded. The carriage is then advanced from this position along the table and across the webs. The flaring ends of the slots have the effect of allowing a certain amount of variation of the position of the knives on the shaft 50, permitting some variation in the expansion of the springs 63 and 70, and they also provide for some variation in the position and the path of the carriage. As the carriage advances to cutting position and across the webs, the springs maintain the cutters 18 and 59 in close contact with the cutting edges 6' and 32, even though there be some variation from the straight line which it is intended that these cutting edges 6' and 32 shall assume and possibly some variation in the path and the vertical angle of the carriage. The undercut arrangement of the edges of 6' and 32 as aforesaid eliminates any chance that the portion of the cutters or cutter plates 6 and 31 below the cutting edges may protrude beyond the respective cutting edges, thus holding the knife out of contact with the corresponding cutting edge and interfering with the precision of the cut.

In the cutting operation, the end of the web 4x'' is held flat and pressed firmly against the table by the presser foot 37 on one side of moving cutter 18 and on the other side of said cutter by the cutter bar 7, the pads 38 and 98 thereof bearing directly against the paper. This provides for a clean cut severing the end of said web without crinkling or disalignment. The end of the web 3x which is folded upwardly and backwardly over the cutter bar 7 is held between the cutter bar 7 and shoe 66 on one side of cutter 59 and on the other side of said cutter 59 between said cutter bar 7 and the roller 56 which advances across the web 3x. In the form shown the cutter 31 forms the surface of the cutter bar 7 beneath the shoe 66, and plate 33 forms the surface of the bar beneath roller 56. The contact described holds the paper flat and reasonably taut in the path of the moving cutter 59 providing a clean severance of the

end of the web 3x whereby it is trimmed in parallel with the similar trimming of web 3x'. The pinion 58 by its engagement with the rack 44 gives the desired rotation of the shaft 59 and knives 18 and 59, though this trimming or cutting operation may be otherwise performed. It is of importance that the construction described provides for the holding and simultaneous trimming of the two end edges of the respective webs to be joined, the trimming cuts being parallel and the end of one web being turned back upon itself so that it can be laid back after cutting, in which position it overlaps the other cut end in position for splicing.

It is also of interest that the cutter bar on which this folded end is supported also serves to hold the other web on the corresponding side of its cutter during cutting.

After the passage of the cutter carriage 1 with the knives 18 and 59 severing the end portions of the webs 3x and 4x', an adhesive strip or other form of adhesive is laid along one or both of the end edges of the webs and the end edge of the web 3x being released, is swung downwardly and laid on the end edge portion of web 56, the carriage 1 being preferably first removed and laid on the shelf 94. When the edges are thus arranged, the iron 93 being duly heated, is passed across the table over the overlapping edge portions of webs 3x and 4x', causing them to adhere closely, or they may be caused to adhere in any other convenient manner, forming the splice 102 which joins webs 3x and 4x' forming the continuous web 4x. The table being then lowered by operation of the eccentrics 10, the cutter bar 7 remains suspended as in Figure 2 by means of stops 21', see Figure 3. The presser foot 37 is also supported out of contact with the web. The motor 189 is then operated rotating the shaft 4' and the roll or roll core 4'' winding the combined web 4x thereon and unrolling the waste end from the let off or roll core 3'', which is controlled by the brake 79 to give the desired tension of the web and prevent premature unrolling.

When the waste end has been completely unrolled and wound onto roll 4x', a new waste end roll is supplied and its tube or roll core 3'' affixed to shaft 3', the empty core 3'' being first removed. The trimming and splicing operation is then repeated. When a continuous web 4x of sufficient length is wound upon the takeup roll core 4'', it is removed and a new web is started in the manner described.

By means of the machine and operation described, the waste ends of paper rolls which are too short to be available for printing in accordance with the present practice, are formed into a continuous web with little loss of time and rolled ready for use after the manner of the standard new roll the saving in this way being very large in proportion to the cost of the machine, which is simple, easy to operate without skilled labor and capable of production and operation on a very economical basis.

We have thus described specifically and in detail, a machine embodying the features of our invention in the preferred form and the manner of operating the same in order that the manner of constructing, applying, operating and using the invention may be fully understood, however the specific terms herein are used in a descriptive rather than in a limiting sense, the scope of the invention being defined in the claims.

What we claim as new and desire to secure by Letters Patent is:

1. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of means for supporting a let off roll for waste ends and a take up roll to carry the continuous web being formed, said rolls being supported in parallel and spaced apart in let off and take up relation, the rolls being rotatable to transfer the web after splicing from the let off roll to the take up roll and means between said rolls for supporting and holding the adjacent ends of the waste end web and the continuous web being formed, and means for trimming said ends transversely of the length of the webs adjacent said support preparatory to splicing them.

2. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of means for supporting a let off roll for waste ends, and a take up roll to carry the continuous web being formed, said shafts being supported in parallel, and spaced apart in let off and take up relation, the rolls being rotatable to transfer the web after splicing from the let off roll to the take up roll, means between said rolls for supporting and holding the adjacent ends of the waste end web and the continuous web being formed, and means for simultaneously trimming both said ends transversely of said webs on said support preparatory to splicing them.

3. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of means for supporting a let off roll for waste ends and a take up roll to carry the continuous web being formed, said shafts being supported in parallel and spaced apart in let off and take up relation, the rolls being rotatable to transfer the web after splicing from the let off roll to the take up roll and means between said rolls for supporting and holding the adjacent ends of the waste end web and the continuous web being formed, and means for trimming said ends transversely of the length of the webs, adjacent said support preparatory to splicing them, said means comprising cutting means on said support extending transversely across the path of the web, a cutter carriage, ways therefor, parallel to said rolls, the carriage being adapted to move transversely of the machine on said ways and cutting means on and moving with said carriage cooperating with the cutting means on the support.

4. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web and to roll said web, of means for supporting a let off roll for waste ends and a take up roll to carry the continuous web being formed, said rolls being supported in parallel and spaced apart in let off and take up relation, the rolls being rotatable to transfer the web as it is formed from the let off roll to the take up roll and means between said rolls for supporting and holding the adjacent ends of the waste end web and the continuous web being formed, means for trimming said ends transversely of the length of the webs adjacent said support preparatory to splicing them, said means comprising cutting means adjacent said support extending transversely of the path of the web, a cutter carriage, ways therefor parallel to said cutting means, the carriage being adapted to move across the path of the web and transversely of the machine on said ways, a rotary

cutter on said carriage cooperating with said transverse cutting means, and means for rotating the cutter as the carriage moves along the ways.

5 5. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web and to roll said web, of means for supporting a let off roll for waste ends, and a take up roll to carry the continuous web being formed, said rolls being supported in parallel and spaced apart in let off and  
10 take up relation, the rolls being rotatable to transfer the web as it is formed from the let off roll to the take up roll and a support for one said web extending across the machine in the direction of the axis of said rolls, a presser foot cooperating with said support to hold one web  
15 end, a cutting edge extending across the machine adjacent the presser foot transversely to the path of the web, a cutter carriage and a way therefor parallel to the roll axes and at one side of said presser foot, a cutter on said carriage adapted to cooperate with said edge, as the carriage moves along the way, and manually operated removable means for holding the web on the side  
20 of said edge opposite to said presser foot.

6. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web and to roll said web, of means for supporting a let off roll for waste  
25 ends, and a take up roll to carry the continuous web being formed, said rolls being supported in parallel with the rolls spaced apart in let off and take up relation, the rolls being rotatable to transfer the web after splicing from the let off roll to the take up roll and a support for one said web extending across the machine in the direction of the axes of said rolls, a presser foot cooperating with said support to hold one  
30 web end, a cutting edge extending across the machine adjacent the presser foot, transversely to the path of the web, a cutter carriage and a way therefor parallel to said cutting edge, a cutter on said carriage adapted to cooperate with said edge, to trim said web end as the carriage  
35 moves along the way and a cutter bar and a support therefor on the opposite side of the said cutting edge from the said presser foot, guiding means for the cutter bar, whereby it is permitted to move into and out of engagement with said support, a cutting edge on said cutter bar extending across the machine parallel to said  
40 first mentioned cutting edge, a cutter on said carriage adapted to cooperate with said cutting edge on the cutter bar and means for clamping the second web end on said cutter bar on the side of the cutting edge on said bar remote from said first mentioned cutting edge to be trimmed by the cooperation of the cutting edge on said bar and the last mentioned cutter on the carriage.

60 7. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of a let off roll shaft for waste end rolls, a take up roll shaft to carry the continuous web being formed, bearings for both said shafts for supporting them in parallel  
65 with the rolls spaced apart in let off and take up relation, the roll shafts being rotatable to transfer the web as it is formed from the let off roll to the take up roll and a table extending transversely of the machine between said shafts and adapted to support the web, said table having a cutting slot with a cutting edge on one side of said slot extending in the direction of said shafts across the path of the web between said shafts,  
70 a presser foot on one side of said slot cooperating

with the table to hold the web, a cutter bar on the side of said slot opposite to said presser foot, said cutter bar having guiding means permitting it to be moved into and out of contact with the web on said table, said cutter bar having a slot with a  
5 cutting edge on one side of said slot extending in the direction of the first mentioned cutting edge, means for holding the paper on the side of said cutting edge remote from said presser foot, ways extending transversely of the machine adjacent  
10 said table, a cutter carriage adapted to be moved across the table on said ways, cutters on said carriage and means for holding them in cutting contact with said edges as the carriage moves across the machine.

8. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, means for supporting a let off roll for waste ends and a take up roll to carry the continuous web being formed, said rolls  
15 being supported in parallel and spaced apart in let off and take up relation, the roll shafts being rotatable to transfer the web as it is spliced from the let off roll to the take up roll and a table extending across the path of the web between said rolls and adapted to support the web, said table having a cutting edge extending transversely  
20 across the path of the web, paper holding means on one side of said edge cooperating with the table to hold the web, a cutting bar on the side of said edge opposite to said paper holding means, said cutting bar having guides permitting it to be moved into and out of contact with the web on  
25 said table, said cutting bar having a cutting edge extending in the direction of the first mentioned cutting edge, means for holding the second web end on the side of said cutter bar remote from said paper holding means, ways extending transversely of the machine adjacent said table, a cutter carriage adapted to be moved across the  
30 table on said ways, cutters on said carriage and means for holding each of them in cutting contact with each of said edges, respectively, as the carriage moves across the machine, said cutting edges having laterally extending portions at their ends inclined backwardly from the line of cut to guide the cutters on said carriage into cutting relation with said edges.

9. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, means for supporting a let off roll for waste ends, and a take up roll to carry a continuous web, rolls being in parallel and spaced apart in let off and take up relation, the rolls being rotatable to transfer the web as it is formed from the let off roll to the take up roll and a table extending across the machine between said rolls and adapted to support the web,  
5 a cutting edge intermediate said table extending across the path of the web in the direction of said roll axes, web holding means on one side of said edge, a cutter bar on the side of said cutting edge opposite to said web holding means, said cutter bar having guiding means permitting it to be moved into and out of contact with the web on  
10 said table, and a cutting edge extending in the direction of the first mentioned cutting edge, means for holding the paper on said cutter bar on the side of said cutting edge remote from said first mentioned cutting edge, ways extending transversely the path of the web adjacent said table, a cutter carriage adapted to be moved across the table on said ways, cutters on said carriage adapted to cooperate respectively with said edges as the carriage moves across the machine, said  
15 20 25 30 35 40 45 50 55 60 65 70 75



cutters being mounted to rotate and also to move transversely to the cutting plane and springs for holding them in cutting contact with the cutting edges.

10. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of means for supporting a let off roll for waste ends and a take up roll to carry a continuous web, said rolls being supported in parallel and spaced apart in let off and take up relation, the rolls being rotatable to transfer the web as it is formed from the let off roll to the take up roll, a table extending across the machine between said shafts, said table having a cutting edge extending across the path of said web, a web holding means on one side of said cutting edge, a cutting bar on the side of said edge opposite to said web holding means, said cutter bar having guides permitting it to be moved into and out of contact with the web on said table, and a cutting edge extending in the direction of the first mentioned cutting edge, means for holding the paper on the side of said cutting edge remote from said first mentioned cutting edge, a cutter carriage adapted to be moved across the path of the web, cutters on said carriage adapted to operate respectively in cutting contact with said respective edges as the carriage moves across the machine, said cutters being mounted to rotate and the machine having a rack parallel to the said cutting edges and a pinion on the carriage engaging the rack to rotate the cutters as the carriage moves across the machine.

11. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of a let off roll for waste ends, and a take up roll to carry the continuous web, bearings for supporting them in parallel with the rolls spaced apart in let off and take up relation, a cutting edge extending across the path of the web, web holding means on one side of said edge, a cutter bar on the side of said edge opposite to said web holding means, said cutter bar having guides permitting it to be moved into and out of contact with the web to hold the same, said cutter bar having a cutting edge extending in the direction of the first mentioned cutting edge, means for holding the paper on the side of said cutter bar remote from said first mentioned edge, a cutter carriage adapted to be moved across the table parallel to said edges, cutters on said carriage operated respectively in cutting relation with said respective cutting edges as the carriage moves across the machine, a table adjacent said cutting edges on which the cut ends of the web may be overlapped for splicing, means for rotating the take up roll shaft and a brake to control the rotation of the let off roll shaft to determine the tension of the continuous web as it is rolled on the take up shaft.

12. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of a let off roll for waste ends, a take up roll shaft to carry the continuous web, bearings for supporting them in parallel, spaced apart in let off and take up relation, a table extending across the machine between said rolls and adapted to support the web, said table having a cutting edge extending transversely across the path of the web, a presser foot on one side of said edge cooperating with the table to hold the web, a cutter bar on the side of said edge opposite to said presser foot, said cutter bar having guiding means permitting it to be moved into and out of contact with the web on

said table, said cutter bar having a cutting edge parallel to the first mentioned cutting edge, means for holding the paper on the side of said cutter bar remote from said presser foot, a cutter carriage adapted to be moved across the path of the web, cutters on said carriage adapted to operate respectively in cutting relation with said respective edges as the carriage moves across the machine, the table being mounted for vertical movement and having means whereby it is forced against the presser foot to clamp the paper and released and lowered to permit the paper to be introduced between the presser foot and the table.

13. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of a let off roll for waste ends, a take up roll shaft to carry the continuous web, bearings for supporting them in parallel, spaced apart in let off and take up relation, a table extending across the machine between said rolls and adapted to support the web, said table having a cutting edge extending transversely across the path of the web, a presser foot on one side of said edge cooperating with the table to hold the web, a cutter bar on the side of said edge opposite to said presser foot, said cutter bar having guiding means permitting it to be moved into and out of contact with the web on said table, said cutter bar having a cutting edge extending in the direction of the first mentioned cutting edge, means for holding the paper on the side of said cutter bar remote from said presser foot, a cutter carriage adapted to be moved across the path of the web, cutters on said carriage adapted to be moved across the path of the web, and adapted to operate respectively in cutting relation with said respective edges as the carriage moves across the machine, the table being mounted for vertical movement and having means whereby it is forced against the presser foot to clamp the paper and released and lowered to permit the paper to be introduced between the presser foot and the table, and the cutter bar overlying the paper on the table and being supported on the table in the upper position of the table and having means whereby it is supported free of the table when the table is lowered.

14. The combination in a machine for splicing the waste ends of paper and similar webs to form them into a continuous web, of a let off roll for waste ends, a take up roll to carry a continuous web, bearings for supporting them in parallel, spaced apart in let off and take up relation, a table to support the web extending transversely of the path of the web between said rolls, said table having a cutting edge extending transversely across the path of the web, means for holding one web end on one side of said cutting edge, a cutter bar mounted to be moved into and out of contact with the web on the table on the other side of said cutting edge, said cutter bar having a top surface adapted to support the other web end turned backwardly from said first mentioned web end and means for clamping the latter web end on a portion of said cutter bar remote from said cutting edge, said cutter bar having a cutting edge parallel to first mentioned said cutting edge and a cutter carriage mounted to move transversely the machine, said carriage having cutters cooperating with both said cutting edges to trim the end edges of the respective webs permitting the web end on the bar to be unfolded from the cutter bar and laid on the other web end on the table for splicing for which operation

the web ends are prepared by the cutting operation.

15. The combination in a machine for splicing the waste ends of paper and similar rolls to form a continuous web, a waste end let off roll near one end of the machine, a take up roll near the other end of the machine and bearings therefor, said rolls being substantially parallel and in let off and take up relation one to the other, means for rotating the take up roll to take up the continuous web as it is formed, a cutting edge extending across the path of the web between said rolls, a support for the paper adjacent said edge, paper holding means for one web end cooperating therewith, a cutting bar located rearwardly of said cutter, a support for the paper and bar, means for guiding said cutting bar permitting it to be moved into and out of contact with said support, said bar having a cutting edge extending in the direction of said first mentioned cutting edge across the path of the web, a cutter carriage having rotating knives adapted to cooperate with said cutting edges and spaced in correspondence therewith, said carriage having a follower and a transverse way, and means for supporting the other web end folded back over said cutting bar at the side of the cutting edge carried thereby, said carriage being adapted for movement across said machine along said way and means for rotating the knives in contact with said respective cutting edges as the carriage moves across the machine.

16. The combination in a machine for splicing the waste ends of paper and similar rolls to form a continuous web, a waste end let off roll at one end of the machine, a take up roll at the other end of the machine and bearings therefor, said rolls being substantially parallel and in let off and take up relation one to the other, means for rotating the take up roll to take up the contin-

uous web as it is formed, a cutting edge extending across the path of the web between said rolls, a support for the paper adjacent said edge, paper holding means for one web end cooperating therewith, a cutting bar located rearwardly of said cutter, a support for the paper and bar, means for guiding said cutting bar permitting it to be moved into and out of contact with said support, said bar having a cutting edge extending in the direction of said first mentioned cutting edge across the path of the web, a cutter carriage having rotating knives adapted to cooperate with said cutting edges and spaced in correspondence therewith, said carriage having a follower and a transverse way therefor, and means for supporting the other web end folded back over said cutting bar at the side of the cutting edge, carried thereby, said carriage being adapted for movement across said machine along said way and a rack and pinion for rotating the knives in contact with said respective cutting edges as the carriage moves across the machine.

17. The combination in a machine for trimming and splicing the waste ends of paper and similar webs of a table for supporting the web, a cutting edge extending along the table, a cutter bar having guiding means permitting it to be moved toward and from the table and for positioning it on the table in parallel with said edge, a cutting edge extending along the bar parallel to said first mentioned edge, means for holding one end folded over said bar away from the other web, the holding means being on the side of the edge on the bar remote from said first mentioned edge, cutting means moving in parallel with said edges to cut the paper so that the folded end may be turned backwardly on to the other end for splicing.

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