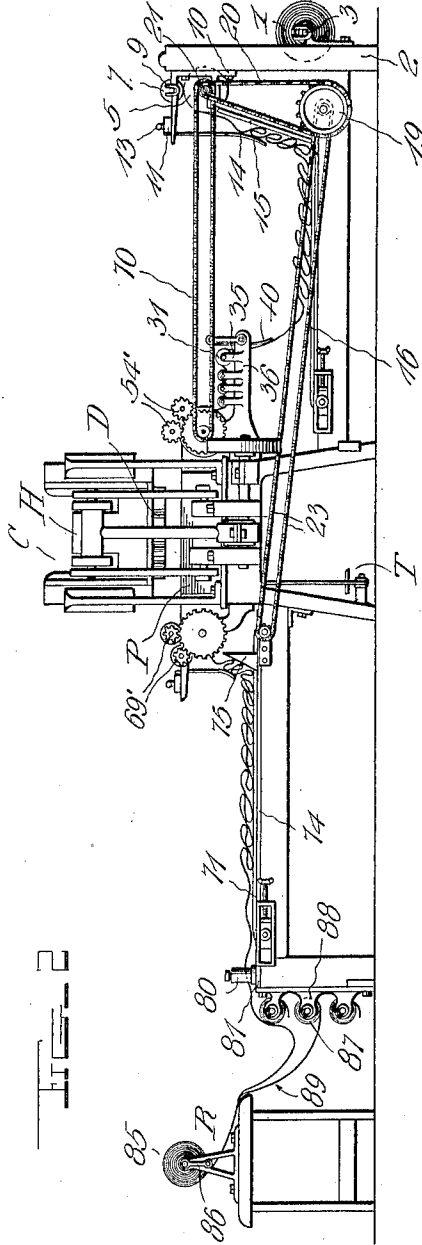
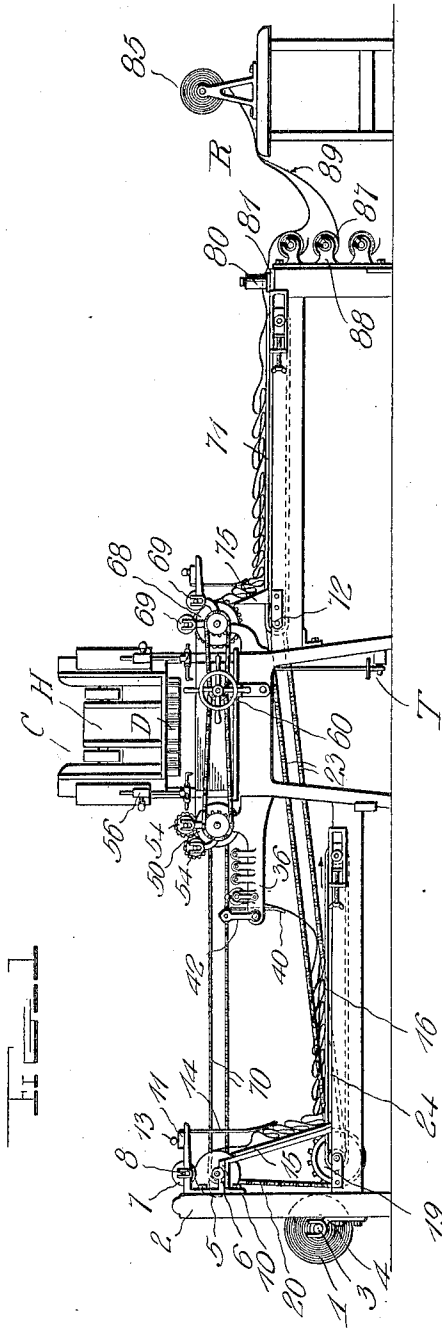


J. McCOY & S. A. COPENHAFER.
 FEED MECHANISM FOR CUTTING MACHINES.
 APPLICATION FILED MAR. 27, 1912.

1,087,801.

Patented Feb. 17, 1914.

6 SHEETS—SHEET 1.



Witnesses

E. Clement

N. L. Collamer

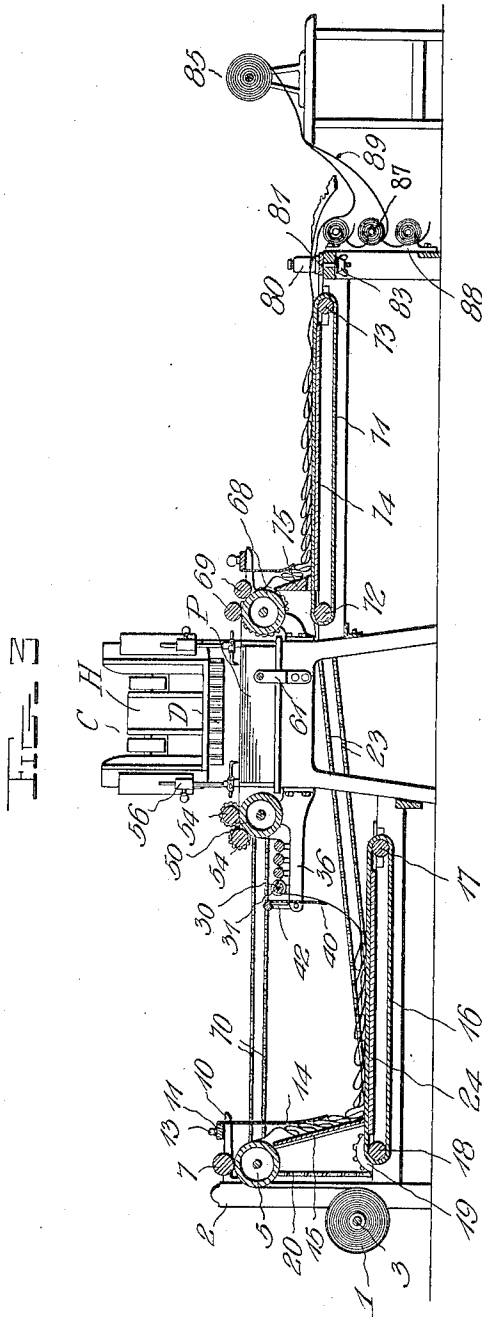
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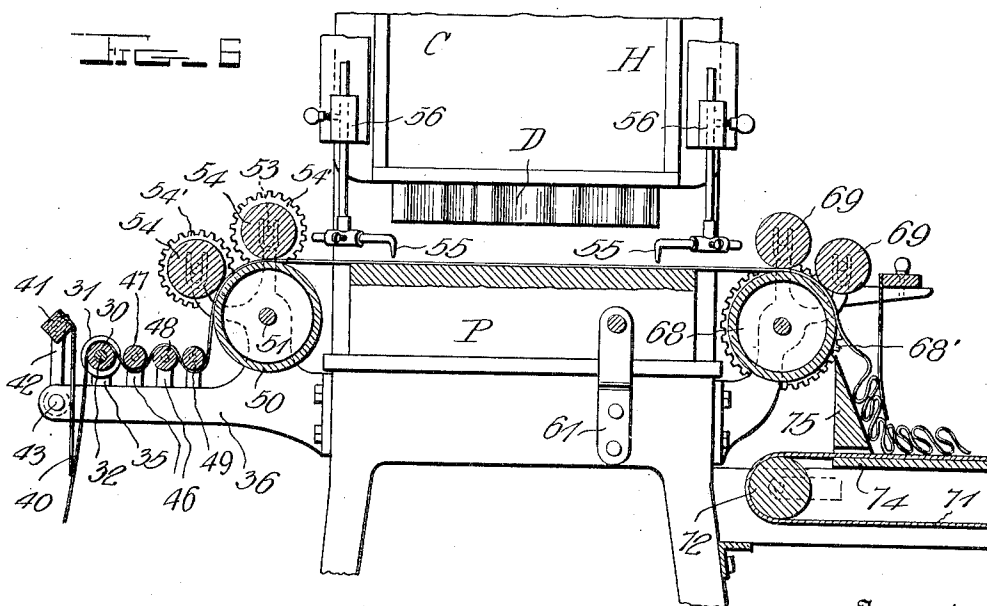
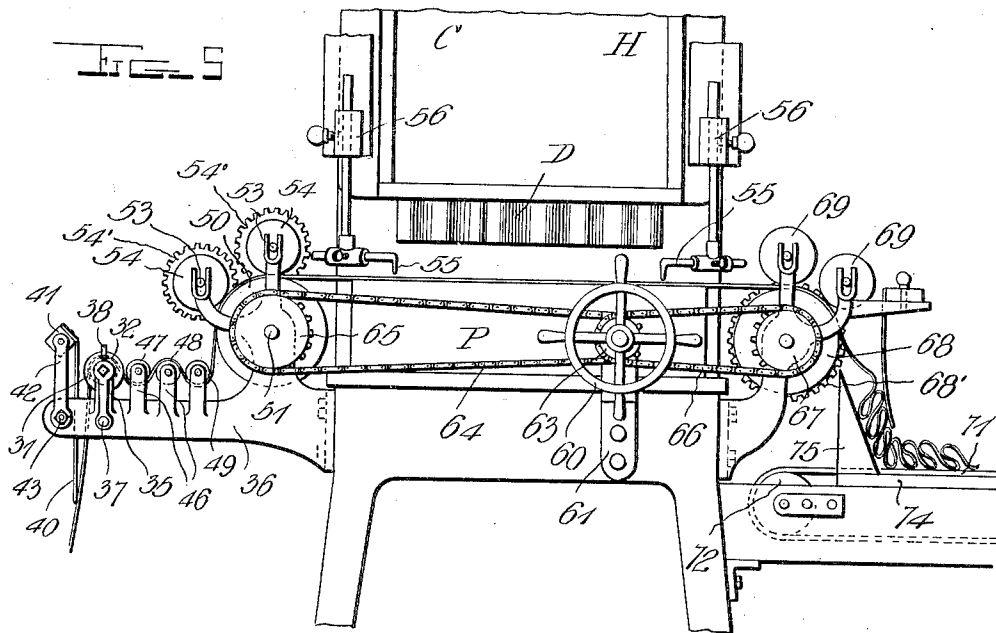


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6 SHEETS—SHEET 3.



Witnesses

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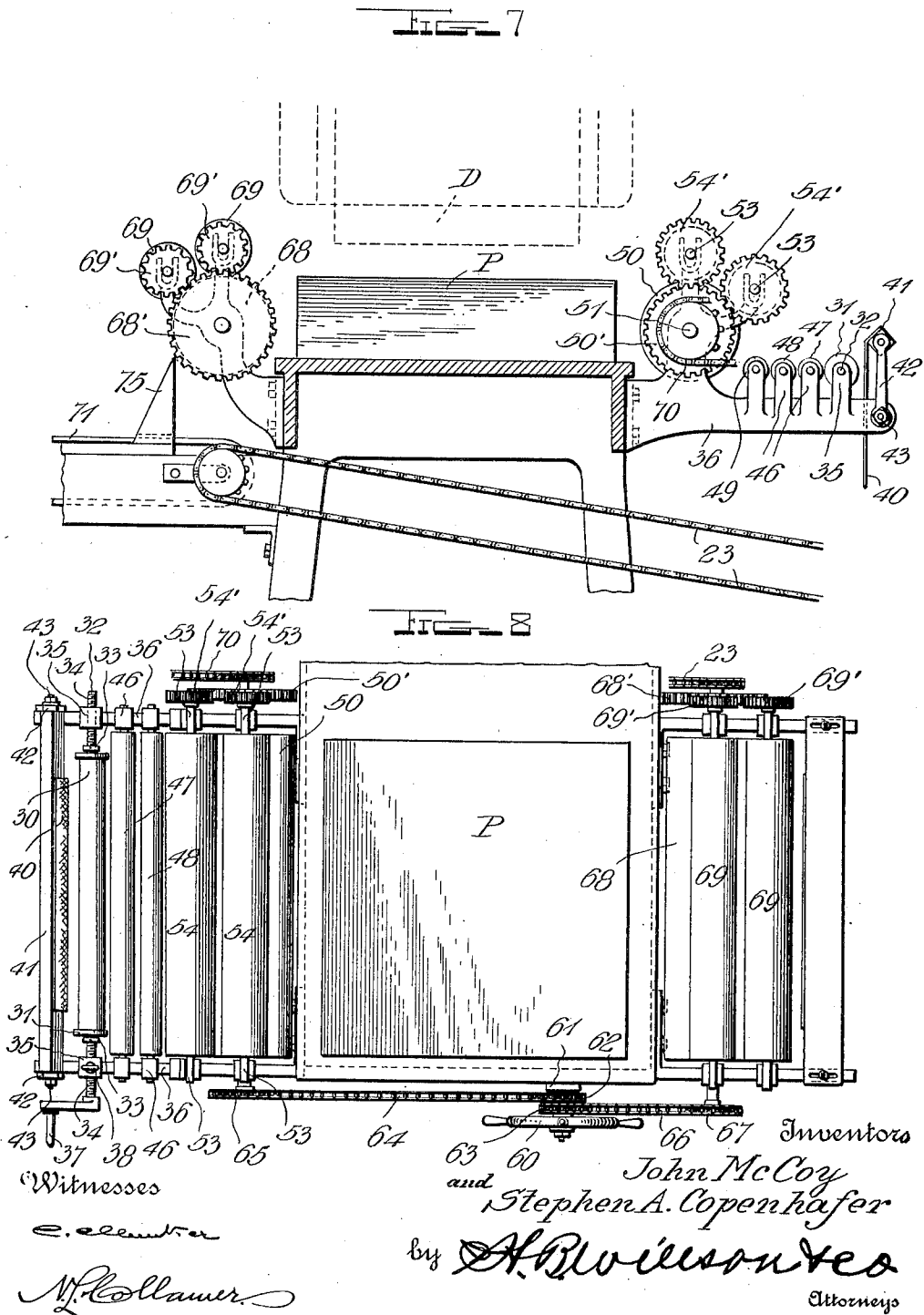
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5 SHEETS—SHEET 4.

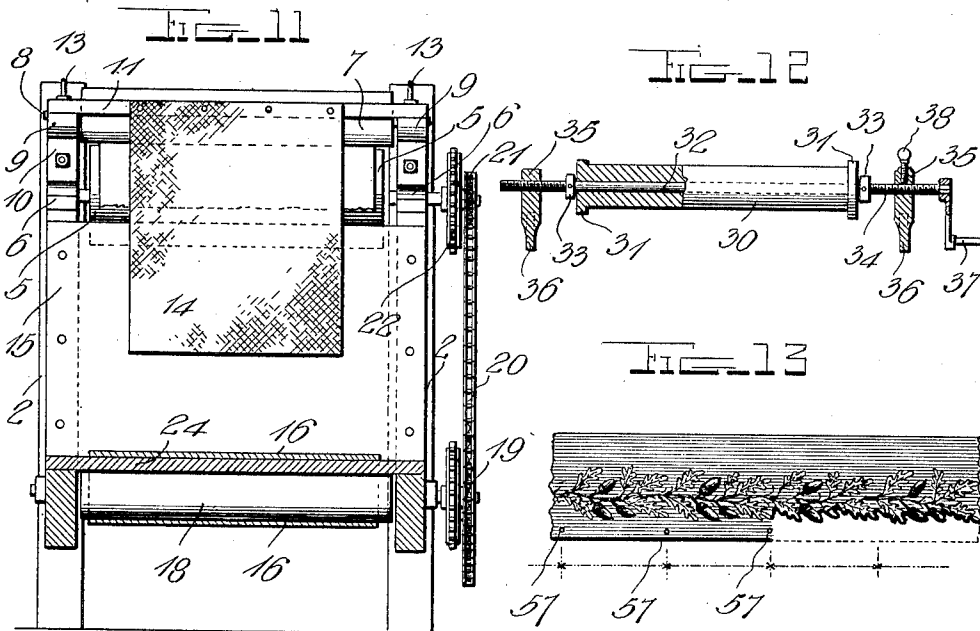
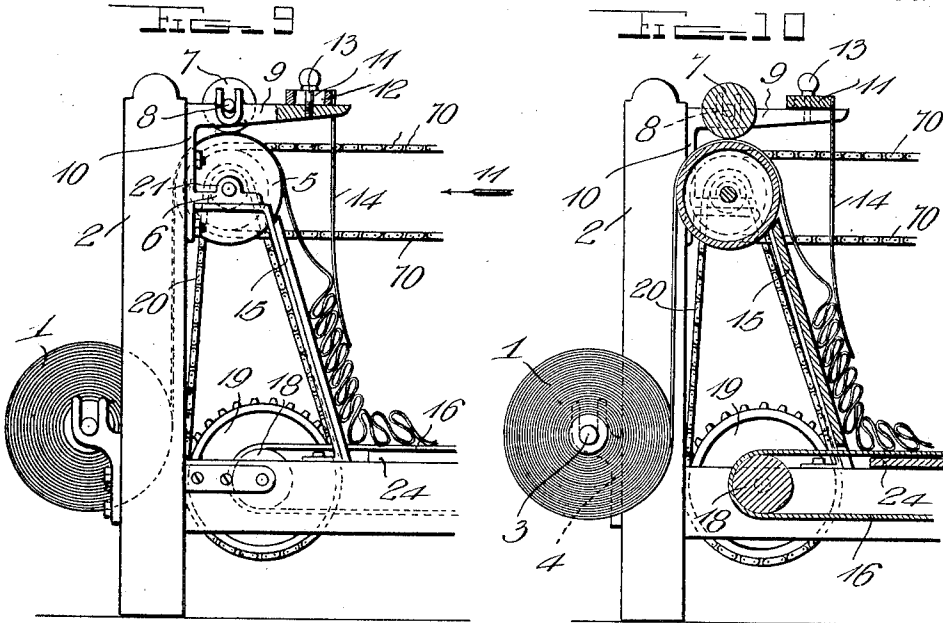


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5 SHEETS—SHEET 5.



Witnesses
 E. E. E. E.
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UNITED STATES PATENT OFFICE.

JOHN MCCOY AND STEPHEN A. COPENHAFFER, OF YORK, PENNSYLVANIA.

FEED MECHANISM FOR CUTTING-MACHINES.

1,087,801.

Specification of Letters Patent.

Patented Feb. 17, 1914.

Application filed March 27, 1912. Serial No. 686,689.

To all whom it may concern:

Be it known that we, JOHN MCCOY and STEPHEN A. COPENHAFFER, citizens of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Feed Mechanism for Cutting-Machines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention takes a strip of flexible material from a roll, delivers it in plaits or folds onto a belt whereon it is allowed to accumulate and by which it is carried forward, then passes it through a tension device and next a driving mechanism by which it is fed to and through a treating machine, beyond which it passes through a drawing mechanism and is delivered onto a second belt in plaits or folds, and from the latter it is carried to a contiguous rack on which the finished product is reeled or rolled with an interposed strip or lining.

In the practical application of the invention and in the embodiment set forth in the following specification, the strip is of paper and the finished product is intended to be a border for wall paper. While the treating machine may include mechanism for printing, embossing, or otherwise ornamenting the strip, we have herein shown and described it as a cutting machine for trimming one edge of the strip in an irregular manner so as to produce a frieze along the same, although it will be understood that the cutting mechanism might easily be duplicated so as to produce a frieze along each edge of the strip or the treating mechanism might be amplified so as to produce embossed paper with one or both edges irregular, and perhaps also print it in colors and otherwise ornament it. It is well known to those engaged in this business that wall paper is quite fragile, easily torn and wrinkled, and often becomes stretched or blistered even while it is stored in a roll.

The present machine is designed to take out such irregularities and feed the paper smooth to the treating machine and there hold it under tension, but between this machine and the roll we interpose feed mechanism so that a quantity of the strip is drawn from the roll and delivered in plaits or folds onto a slow-moving belt by which it is car-

ried toward the treating machine and from which belt it is taken up by the tension mechanism and delivered positively to said machine. The interposition of this detail avoids the tearing of the paper as often occurs when it is drawn forcibly from the roll and fed directly to the treating machine. Again, after leaving the latter, we prefer to convey the paper in plaits or folds along a second slow-moving apron or belt toward the rack upon which it is reeled or rolled in its finished condition, and the interposition of this detail prevents the tearing of the finished product which might occur if the operator who manipulates this reel should turn it more rapidly than the finished product is delivered from the treating machine.

With this general statement of the various objects accomplished by the present invention, the same may be said to consist in the mechanism hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a front elevation, Fig. 2 a rear elevation, Fig. 3 a central longitudinal section, and Fig. 4 a plan view of this machine complete. The remaining views are on a larger scale. Fig. 5 is a front elevation of the cutting machine and the central portion of the entire mechanism, and Fig. 6 is a vertical longitudinal section; Fig. 7 a rear elevation, and Fig. 8 a plan view of the same parts. Fig. 9 is an enlarged side elevation of the feeding mechanism for drawing the strip from the roll at the inlet end of the machine, and Fig. 10 is a central vertical sectional view through this portion of the machine. Fig. 11 is a vertical cross section through the machine, looking in the direction of the arrow 11 at the right of Fig. 9. Fig. 12 is an enlarged side elevation, partly in section, showing the guide roller and the mechanism for adjusting it. Fig. 13 is a plan view of a portion of the strip of wall paper, the left hand part of the view showing it before and the right hand part of the view after the cut is made.

Broadly speaking this machine comprises feeding mechanism at its left hand end for drawing the paper from the roll, an endless belt conveying the paper thence to the treating machine C which stands at the center of the entire piece of machinery, a second endless belt carrying the treated paper away from such machine, means for feeding a continuous strip or lining underneath the

finished product, and a contiguous rack (either forming part of or detached from the main framework) on which the product and its lining are reeled or rolled.

5 No novelty is claimed for the treating machine herein broadly designated by the letter C, and it need not be described further than to say that if it be a cutter it will include a platen P, a cutting die D, and a
10 vertically movable head H carrying the die and driven from a suitable source of power.

The uncut paper is shown in a roll 1 at the left end of the frame 2 of this machine, its shaft 3 being mounted in bearings 4 as
15 best seen in Figs. 9 and 10, although we do not limit ourselves to this specific manner of mounting the roll. From the latter the paper is led to the feeding mechanism which consists of a drum 5 mounted in bearings 6
20 on the frame near the top of the same, and a gravity roll 7 whose trunnions 8 are mounted loosely in slotted bearings 9, which latter are carried by brackets 10 on the frame 2. On the brackets 10 is adjustably
25 supported a cross bar 11 (as by means of slots 12 and set screws 13) and from said bar depends a curtain preferably composed of some rather heavy fabric such as burlap, carpet, or canvas, and indicated by the reference numeral 14. The lower edge of this
30 curtain hangs adjacent to and over a fixed guide 15 inclined downward from the drum 5 as best seen in Fig. 9, and the paper after passing over said drum and under the gravity
35 roll 7 will strike the curtain and by it be automatically plaited or folded onto the guide, the rather loose plaits or folds assuming an oblique position as shown in Figs. 9 and 10. The adjustment of the cross bar
40 11 is obviously for the purpose of setting the curtain 14 so that the plaits or folds will certainly be made, and their length will be such as the character of the paper requires.

The numeral 16 designates an endless belt
45 moving over rollers 17 and 18 journaled in the frame, the shaft of the roller 18 having on one extremity a sprocket wheel 19 connected by a chain belt 20 with a similar sprocket wheel 21 at the rear end of the
50 shaft of the drum 5, and a second sprocket wheel 22 on the same roller shaft is connected by another chain belt 23 with another endless belt 72 to be described hereinafter. Thus the plaited paper passes off the
55 guide and out from under the curtain and is delivered onto and carried forward by the belt 16 so that its plaits or folds are not interrupted and a considerable quantity of paper accumulates on the upper side of the
60 belt which travels over a board 24 fixed in the frame 2 so that it shall not sag.

The guide roller (see Fig. 12) over which the paper passes next is designated by the numeral 30, has radial flanges 31 at its
65 extremities, and is mounted loosely on a shaft

32 between stops 33 fixed thereon, the extremities of the shaft being threaded as at 34 and engaging threaded holes in or nuts 35 carried by brackets 36 projecting from the framework of the cutter; and one end
70 of the shaft has a crank handle 37 which may be turned to set the shaft and hence the roller to a proper position laterally between the brackets. After so setting the roller, a set screw 38 or other device may be tight-
75 ened up to hold the shaft from movement. At this time the paper has not been cut and therefore it has two straight edges, and the flanges 31 are preferably spaced sufficiently far apart to rest against said edges nicely.
80 Coacting with said roller is a second curtain 40 hanging from a cross bar 41 whose extremities are mounted in links 42 upstanding from the outer ends of the brackets 36 to which they are pivotally connected as by
85 studs and nuts 43 so that the links may be adjusted to adjust the position of the curtain. The latter hangs by preference about as seen in Figs. 5 and 6, and its lower edge serves as a scraper to take out the folds or
90 plaits of the paper before the latter passes to the guide roller.

Adjacent the roller and scraper last above described is located what might be termed the tension device, and by preference the
95 same is mounted upon the same brackets 36 and consists of a series of bearings 46 in which are journaled rollers 47, 48 and 49, and the paper after passing over the guide roller is led under the roller 47, over the
100 roller 48 and then under the roller 49 so that a certain amount of tension is applied to the paper strip.

The driving drum 50 referred to above may well be hollow with trunnions 51
105 mounted in bearings in the same brackets 36. Adjacent said bearings are others in which are mounted the trunnions 53 of two ironing rollers 54, one by preference disposed above the drum and the other about 60° forward
110 of the point upon which the uppermost roller rests; and the paper after passing through the tension device passes under these rollers. The rearmost trunnion 51 of the drum 50 carries a gear 50' a little smaller
115 than the drum, and the rearmost trunnions 53 of the rollers 54 carry pinions 54' a little larger than the rollers and meshing with said gear, all as best seen in Fig. 7. This construction causes the face of the rollers to
120 move somewhat slower than the face of the drum, and in doing so they stroke or iron out any kinks or wrinkles that may remain in the paper after passing through the tension device.
125

The treating machine or cutter C has already been explained as far as we deem necessary. The paper after passing through the driving mechanism is led across the
130 platen P of this cutting machine and pref-

erably under guide fingers whose shanks are adjustably held in brackets 56 carried by the framework of the cutter, and whose extremities or points 55 are directed downward toward the platen but elevated slightly above the same. The paper when it is printed or embossed or otherwise ornamented may be provided with perforations or indicating marks 57 (see Fig. 13) which are spaced apart at intervals equal to the length of the figure that is repeated thereon, and it is intended that the points 55 shall be so set that when they both register with a pair of said marks 57, the cutting die D can be brought down to trim the waste along the edge of the paper as shown at the right hand of Fig. 4. Thereafter the drawing mechanism must be actuated to move the paper along for another interval which will be the length of one or more figures such as are repeated in the design of the paper, in a manner which will be well understood by the manufacturer of wall paper and the like. It will be understood, also, that when paper of a different pattern or design is to be trimmed, the die D in the cutter C must be changed and the fingers and their points reset to correspond.

The drawing mechanism is disposed to the right of the cutter as seen in Fig. 1, and is best illustrated in detail in Figs. 5 and 6. By preference its construction follows that of the driving mechanism at the left side of the cutter, described above, and therefore we need not repeat its details. It will be seen from Fig. 7, however, that the relative sizes of the gear 68' and the pinions 69' with respect to the drum and rollers at this side of the cutter, are reversed from the relative sizes of the gear 50' and pinions 54' described above. The result is that the faces of the rolls in the drawing mechanism move a little faster than the face of the drum so that the paper is drawn straight across the platen of the machine and cannot shift laterally. Power is applied by means of a hand wheel 60 journaled in a bracket 61 on the frame of the cutter and carrying two sprocket wheels 62 and 63 on its shaft, one of said wheels being connected by a chain belt 64 with a sprocket pinion 65 fast on the front trunnion of the driving drum 50, and the other being connected by a belt 66 with a similar sprocket pinion 67 fast on the front trunnion of the drum 68 of the drawing mechanism. By preference the pinions 65 and 67 are not of the same size; that is to say, the former will have about twenty teeth and the latter about eighteen, so that when the power wheel 60 is rotated the drum 68 and rollers 69 of the drawing mechanism are turned to a slightly greater degree than the drum and rollers of the driving mechanism, and the result is that the paper is placed under some tension where it passes across the platen P of the cutting machine. Yet

the paper will not be torn under the tension set up, because it will slip through the drawing mechanism before it will tear, and the slipping occurs at this side of the cutter C because of the stronger grasp on the paper at the other side of said cutter which is afforded by the tension device. From the rear trunnion 51 of the drum 50 power is communicated as by a belt 70 to the rear trunnion of the drum 5 of the feeding mechanism, and therefore when the operator turns the hand wheel 60 and moves the paper forward over the platen for a certain distance, he simultaneously causes the rotation of the feeding drum 5 to draw an equal length of paper off of the roll 1. This drum being connected with the belt 16 causes its feed forward toward the cutter, and the parts are so proportioned that the feed of this belt will carry forward as much of the plaited paper as is necessary and yet only so much, in order that the plaits or folds may remain stacked upon the belt 16 as shown at the left of Fig. 1.

Experience has taught us the value of having at all times quite a considerable supply of loose material to work on, rather than drawing the strips direct from the roll which is large and heavy and whose sudden starting and stopping would throw the strip of paper out of the proper alinement or possibly stretch or tear it by accident. Substantially the same reason prevails for the construction next to be described, whereby the belt 16 is practically duplicated at the other side of the cutting machine C. In addition, as will subsequently appear herein, the finished product is rolled or reeled at a remote point and by another operator; and, lest he should roll it up too rapidly and tear or injure it, a second slow-moving belt is provided so that he shall always have quite a supply of the loose material to work on. At the right end of the machine is a second endless belt 71 moving over rollers 72 and 73 and its upper stretch sliding over a board 74, much the same as the belt already described; and at the inner end of said board a guide 75 rises obliquely therefrom toward the drum 68, and another hanging curtain is provided as seen at the right of Figs. 5 and 6 and for the same purpose as the first curtain 14. Therefore the paper after having been cut passes over the drum 68 and under its presser rollers 69, and is again subjected to the plaiting process and delivered on the rear belt 71 in folds or plaits as seen at the right of Fig. 1.

At the delivery end of the machine the structure is slightly different from that at the inlet end thereof. Here the paper after leaving the belt 71 (which is preferably located at a considerably higher level than the belt 16) passes between two upright guide rollers 80 mounted on a cross bar 81 having

a slot 82 which is adjustably supported by a set screw 83 in the frame 2; and from this point the trimmed or finished paper is led to a stand or rack R where it is rolled or reeled as at 85 by means of a crank handle 86, or by power if desired, although we prefer the construction illustrated. In order that the fine points and projections of the grille or frieze may not become injured or turned under, we find it wise to mount a roll 87 of coarse paper in brackets 88 on the frame 2 at its delivery end, and lead this paper upward as at 89 under the wall paper being finished and wind it onto the roll 85 therewith, so that the lining paper 89 may be interposed between the convolutions of the wall paper as it is finished. There may be several pairs of the brackets 88 as indicated in the drawings, and several varieties of the lining paper 89 as shown, and in some instances it may be desirable to put several thicknesses of the same and perhaps several widths of the same onto the roll 85 with the finished product.

Thus it will be seen that we have produced a machine which takes the wall paper from a roll 1, passes it through feeding mechanism at the inlet end of the frame, plaits or folds it adjacent this point and delivers it onto a slow-moving belt 16, carries it thereby to the guide roller 30 whence it is passed through the tension device, and feeds it to and through a cutting machine C. The latter is driven by any suitable source of power, but is controlled by a treadle or pedal T so that the operator may cause the die D to descend upon its platen at intervals when the marks in the paper underlie the points 55, and this of course he will not do until he has adjusted the paper exactly in proper position. After the paper has been cut it is drawn forward or to the right out of the cutter C by means of the drawing mechanism, plaited or folded again and delivered onto a second endless belt, and carried thence to and delivered over the right or outlet end of the machine as shown. Here the finished product is produced and the waste strip is doubtless carried to one side and torn off from time to time; and beneath this end of the machine are mounted rolls of lining paper so that as the finished product is carried to the rack R and wound into a roll, the lining is wound with it and the fine points of the grille or frieze are prevented from injury.

We do not confine ourselves to the details of construction, but have amplified the same for purposes of illustration.

What is claimed as new is:

1. In a machine of the class described, the combination with feed mechanism adapted to draw a strip from a roll; of a moving belt, a fixed guide inclined downwardly from said feed mechanism to the belt, and a

curtain suspended from an overhead support with its lower edge hanging adjacent said guide so as to produce plaits or folds in the strip between the feeding mechanism and belt.

2. In a machine of the class described, the combination with a frame, bearings and brackets carried thereby, a drum mounted in certain of said bearings, a gravity roll adapted to press a strip against the drum, a fixed guide inclined downward adjacent said drum and over which the strip moves, and a belt moving under the guide; of a cross bar adjustably mounted on said brackets, and a curtain secured to said bar with its lower edge disposed adjacent the guide so as to rest on the strip and produce plaits or folds therein between said drum and belt.

3. In a machine of the class described, the combination with a moving belt, and mechanism for feeding a strip onto the same in plaits; of a machine for treating said strip, drawing mechanism interposed between said machine and belt and over the latter, and a curtain hung from an overhead support and under whose lower edge the strip passes as it rises from said belt, for the purpose set forth.

4. In a machine of the class described, the combination with a substantially horizontal belt, a main frame having bearings and brackets, mechanism mounted in said bearings for drawing a strip from a roll, a fixed guide depending thence to a point adjacent said belt, and a curtain carried by said brackets and hanging over the guide to produce plaits or folds in the strip as it is delivered to the belt; of a machine for treating said strip, means located above the delivery end of said belt for feeding the strip to said machine, and a curtain hung from an overhead support and under whose lower edge the strip passes as it rises from said belt, for the purpose set forth.

5. In a machine of the class described, the combination with a horizontally moving belt, a frame in which it is mounted, brackets projecting inward in pairs over the ends of the belt, and an inclined guide fixed over the inner end of said belt; of means for feeding a strip over said guide, a cross bar adjustably mounted in one pair of brackets, a curtain depending from this cross bar for producing plaits or folds in the strip as it passes onto the belt, links adjustably mounted in the other pair of brackets, a cross bar connecting said links, a second curtain depending from this cross bar, and means for lifting the strip off the belt under the free edge of this curtain, for the purpose set forth.

6. In a machine of the class described, the combination with a frame, a moving belt thereon, and mechanism for feeding a strip onto the same in plaits; of a machine for

treating said strip, drawing mechanism interposed between said machine and belt and over the latter, a pair of links adjustable on the frame, a cross bar carried thereby, and
 5 a curtain hung from said cross bar and under whose lower edge the strip is drawn as it rises from said belt, for the purpose set forth.

7. In a machine of the class described,
 10 the combination with a treating machine, strip-driving mechanism at one side of the machine and drawing mechanism at the other side thereof, and each of said mechanisms including a drum; of manually controlled power mechanism disposed between
 15 said other mechanisms and having two sprocket wheels on its shaft, sprocket gears on the shafts of said drums, that on the shaft of the drawing mechanism being slightly smaller than that on the shaft of the driving mechanism, and chain belts connecting the driving sprockets with the sprocket gears, for the purpose set forth.

8. In a machine for treating wall paper and the like, the combination with a horizontally moving belt adapted to carry a strip of paper in plaits or folds; of a machine for treating the paper, and means interposed between said machine and belt for
 25 removing the folds and creases from the strip and passing it to said machine.

9. In a machine for trimming paper having a continuous pattern along its edge, the combination with a cutting machine whose
 35 die matches the pattern, mechanism for feeding the paper through the cutting machine, and means for actuating the feeding mechanism of guide fingers adjustably mounted on the frame of the cutting machine and whose
 40 points are adapted to coact with the figures of the pattern, substantially as set forth.

10. In a machine of the class described, the combination with the strip feeding mechanism, and a strip treating machine; of
 45 an endless belt to which the treated strip is delivered, a frame carrying said belt and having bearings, a reel on which the finished product is wound, and a roll of lining paper mounted in said bearings and wound
 50 on the reel with the finished product, for the purpose set forth.

11. In a machine for treating wall paper and the like, the combination with mechanism for drawing the strip of paper from a
 55 roll, a horizontally moving belt, and means for feeding the strip from said drawing mechanism onto the belt in plaits or folds; of a machine for treating the paper, and means interposed between said machine and
 60 belt for removing the folds and creases from the strip and passing it to said machine.

12. In a machine for treating wall paper and the like, the combination with mechanism for drawing the strip of paper from a
 65 roll, a horizontally moving belt, and means

for feeding the strip from said drawing mechanism onto said belt in plaits or folds; of a machine for treating the paper, driving mechanism adjacent the machine for feeding the strip of paper thereto, and a tension
 70 device between the driving mechanism and belt for removing the wrinkles and folds in the strip.

13. In a machine for treating wall paper and the like, the combination with mechanism
 75 for drawing the strip of paper from a roll, a horizontally moving belt, and means for feeding the strip from said drawing mechanism onto said belt in plaits or folds; of a machine for treating the paper, driving
 80 mechanism adjacent the machine for feeding the strip of paper thereto, drawing mechanism on the opposite side of said machine for taking the finished product therefrom, a reel on which said product is wound,
 85 and a tension device between the driving mechanism and belt for removing the wrinkles and folds in the strip.

14. In a machine for trimming wall paper and the like, the combination with the cutting machine, a driving mechanism at one
 90 side of such machine and a drawing mechanism at the other side thereof, each including a drum, and connections between said drums for rotating them in unison but the
 95 drawing drum at a slightly increased speed over the driving drum; of a slow-moving belt adjacent said driving drum, means for drawing the paper from a roll and feeding
 100 it in plaits onto said belt, a tension device for removing said plaits and feeding the strip to said driving drum, a reel at the opposite side of said drawing drum, and means for conveying the paper from this
 105 drum to the reel.

15. In a machine for trimming wall paper and the like, the combination with the cutting machine, a driving mechanism at one
 110 side of such machine and a drawing mechanism at the other side thereof, each including a drum, and connections between said drums for rotating them in unison but the drawing drum at a slightly increased speed
 115 over the driving drum; of a slow-moving belt adjacent said driving drum, means for drawing the paper from a roll and feeding it in plaits onto said belt, a tension device for removing said plaits and feeding the
 120 strip to said driving drum, a slow-moving belt adjacent said drawing drum and to which the latter delivers the finished product in plaits, an independently operated reel at the outer end of this belt, and means for delivering the finished product to the reel.

16. In a machine for trimming wall paper
 125 and the like, the combination with the cutting machine, a driving mechanism at one side of such machine and a drawing mechanism at the other side thereof, each including a drum and gravity rolls resting upon
 130

it, and connections between said drums for rotating them in unison but the drawing drum at a slightly increased speed over the driving drum; of a feed belt adjacent said driving drum, means for drawing the paper from a roll and feeding it onto said belt, a tension device between the belt and said driving drum, a belt adjacent said drawing drum and to which the latter delivers the finished product, and means for receiving the finished product at the delivery end of the belt.

17. In a machine for trimming wall paper and the like, the combination with the cutting machine, driving mechanism at one side and drawing mechanism at the other side thereof, a manually controlled source of power for both of said mechanisms, and means for drawing the paper from a roll and feeding it in folds or plaits to the driving mechanism; of a slow-moving belt to which the finished product is delivered in folds or plaits from the drawing mechanism, and an independently operated reel on which said product is wound as it is drawn from said belt.

18. The herein described guide roller for strips of paper and the like, comprising the roller proper having radial flanges at its extremities, a shaft on which the roller is journaled, the extremities of the shaft being threaded and one of them carrying a crank handle, stops fixed on the shaft against the end of the roller, nuts through which said threaded extremities are passed, and a set screw through one nut against the shaft, for the purpose set forth.

19. In a machine for handling strips of paper and the like, the combination with a frame, and a set screw therein; of a bar extending across the frame and having a slot adjustably engaged by said set screw, means for feeding the strip along upon the frame and for drawing it over the bar, and two guide rollers mounted on upright pivots on said bar for engaging the edges of the strip.

20. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller moves slower than the drum; and drawing mechanism at the other side of said machine.

21. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller moves slower than the drum; and drawing mechanism at the other side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller is moved faster than the drum.

22. The combination with a machine for treating a strip of paper; of driving mechanism

at one side of said machine including a drum and a gravity roller resting thereon; and drawing mechanism at the other side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller is moved faster than the drum.

23. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller moves slower than the drum, drawing mechanism at the other side of said machine; and means for rotating said drums in unison, the drawing drum at a slightly greater speed than the other.

24. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum, a gravity roller resting thereon, connections whereby the roller moves slower than the drum; and drawing mechanism at the other side of said machine; and manually operable means for rotating said drums in unison, the drawing drum at a slightly greater speed than the other.

25. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller moves slower than the drum; drawing mechanism at the other side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller is moved faster than the drum; and manually operable means for rotating said drums in unison, the drawing drum at a slightly greater speed than the other.

26. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum and a gravity roller resting thereon; drawing mechanism at the other side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller is moved faster than the drum; and manually operable means for rotating said drums in unison, the drawing drum at a slightly greater speed than the other.

27. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum, a gravity roller resting thereon, connections whereby the roller moves slower than the drum; drawing mechanism at the other side of said machine; means for rotating said drums in unison, the drawing drum at a slightly greater speed than the other; and a tension device acting on the paper in advance of the paper-driving mechanism.

28. The combination with a machine for treating a strip of paper; of driving mechanism

anism at one side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller moves slower than the drum; drawing mechanism at the other side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller is moved faster than the drum; means for rotating said drums in unison, the drawing drum at a slightly greater speed than the other; and a tension device acting on the paper in advance of the paper-driving mechanism.

29. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum and a gravity roller resting thereon; drawing mechanism at the other side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller is moved faster than the drum; means for rotating said drums in unison, the drawing drum at a slightly greater speed than the other; and a tension device acting on the paper in advance of the paper-driving mechanism.

30. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum, a gravity roller resting thereon, connections whereby the roller moves slower than the drum; drawing mechanism at the other side of said machine; and a tension

device acting on the paper in advance of the paper-driving mechanism.

31. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller moves slower than the drum; drawing mechanism at the other side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller is moved faster than the drum; and a tension device acting on the paper in advance of the paper-driving mechanism.

32. The combination with a machine for treating a strip of paper; of driving mechanism at one side of said machine including a drum and a gravity roller resting thereon; drawing mechanism at the other side of said machine including a drum, a gravity roller resting thereon, and connections whereby the roller is moved faster than the drum; and a tension device acting on the paper in advance of the paper-driving mechanism.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JOHN McCOY.

STEPHEN A. COPENHAFFER.

Witnesses:

J. C. EISENHART,

ROBERT D. MCCOY.