United States Patent

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[54] **GANG SLITTER SAW FOR PAPER PRODUCTS**
11 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **83/411,**
83/431, 83/443, 143/57
[51] **Int. Cl.** **B26d 1/14,**
B26d 3/16, B26d 7/06
[50] **Field of Search** 83/411,
425, 431, 443; 143/57

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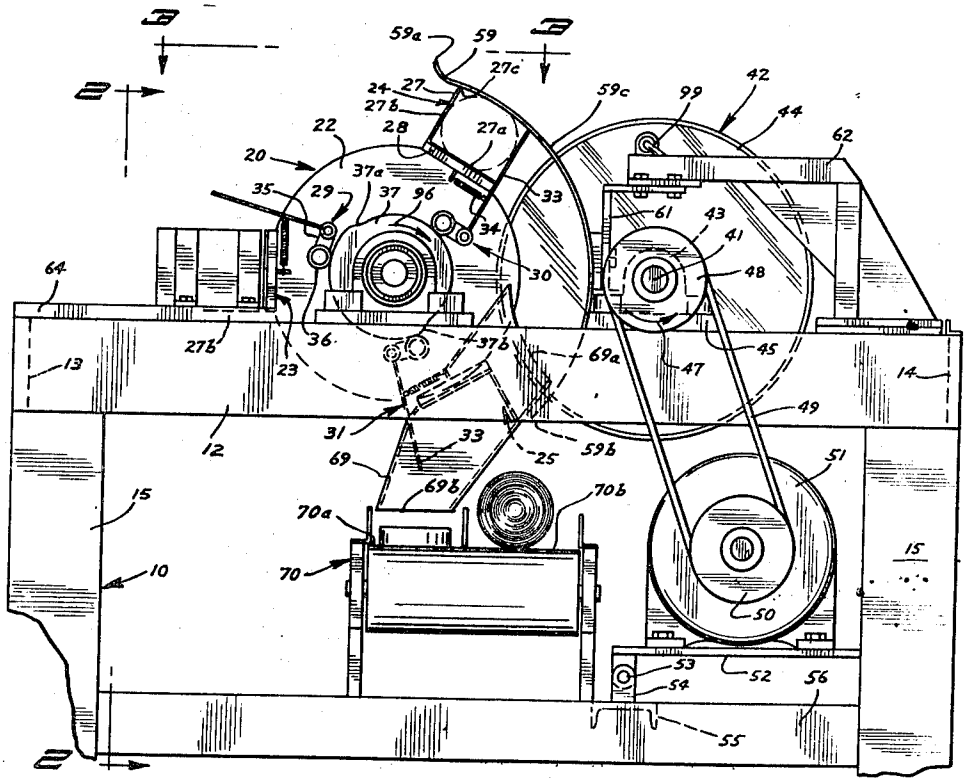
ABSTRACT: Apparatus for severing logs of paper products into specified lengths that includes log feeding mechanism for receiving an unsevered log at a loading station, and then clampingly retaining the log as it moves the log through an arcuate path into contact with a plurality of continuously rotating, axially spaced circular saws and discharge the trimmings and specified lengths onto a conveyor. The log feeding mechanism includes a plurality of sets of angular spaced pockets mounted on a rotatable drum that is rotated through angular increments by selectively operated indexing mechanism and automatically operated holding plates for the pockets. Each of said sets include a plurality of axially spaced and axially aligned pockets.



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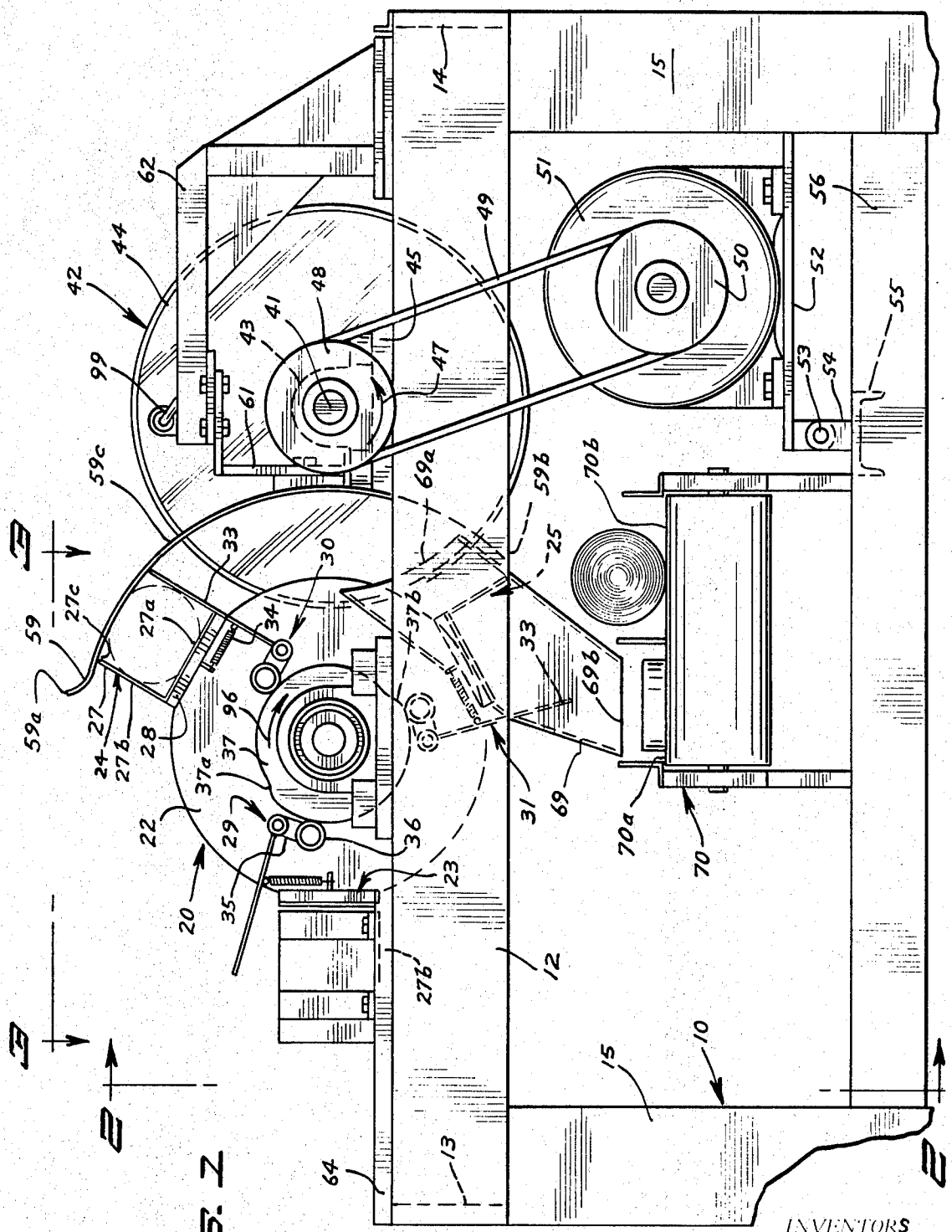

FIG. 2

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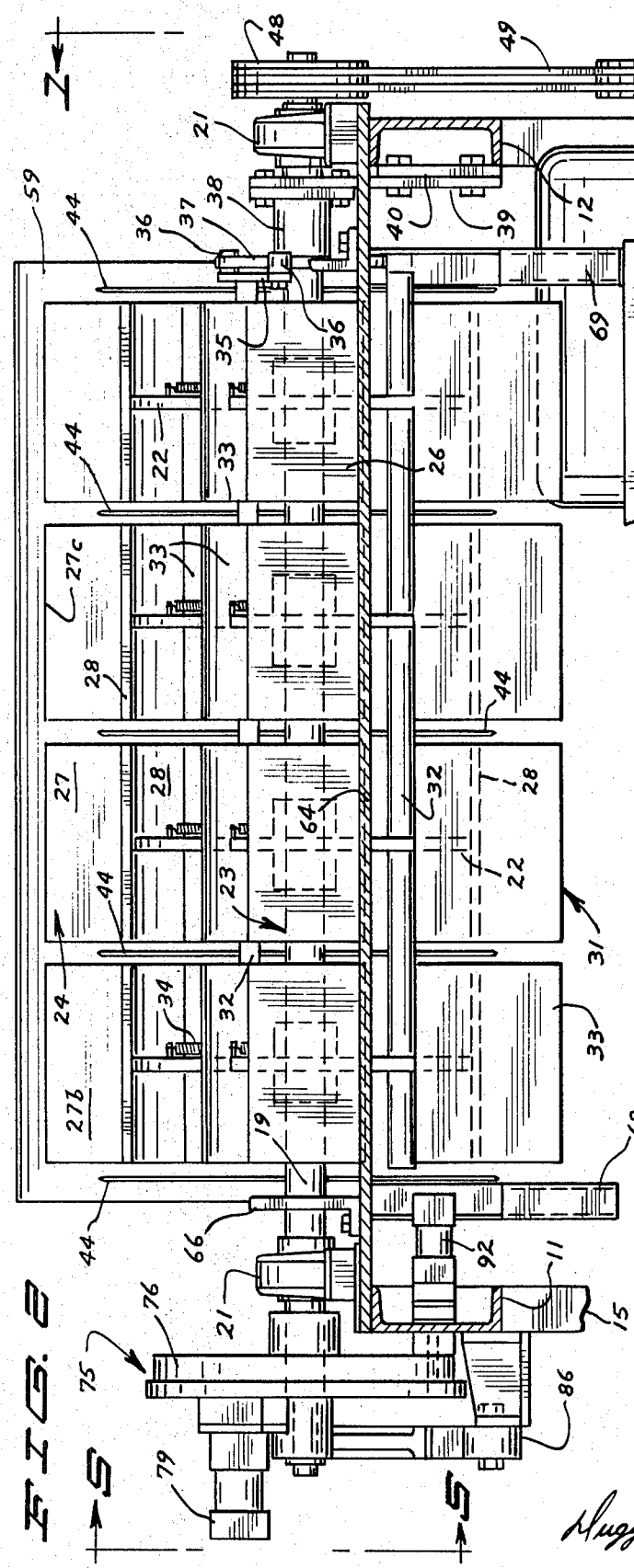

FIG. 2

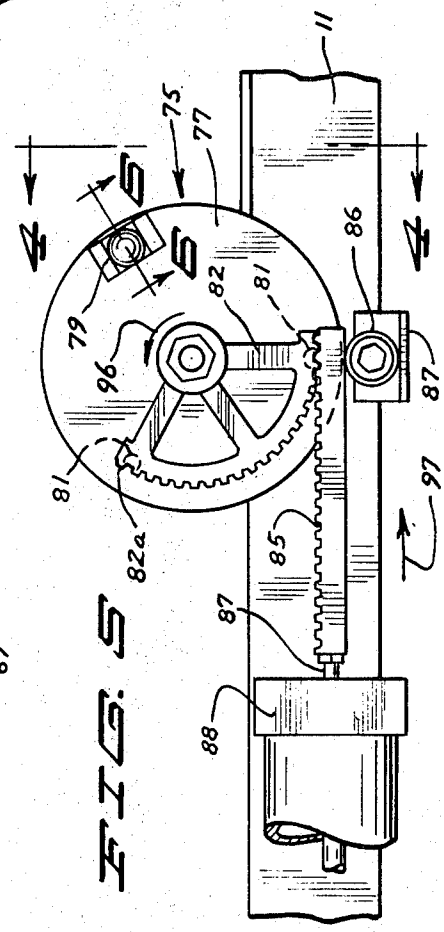

FIG. 5

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FIG. 3

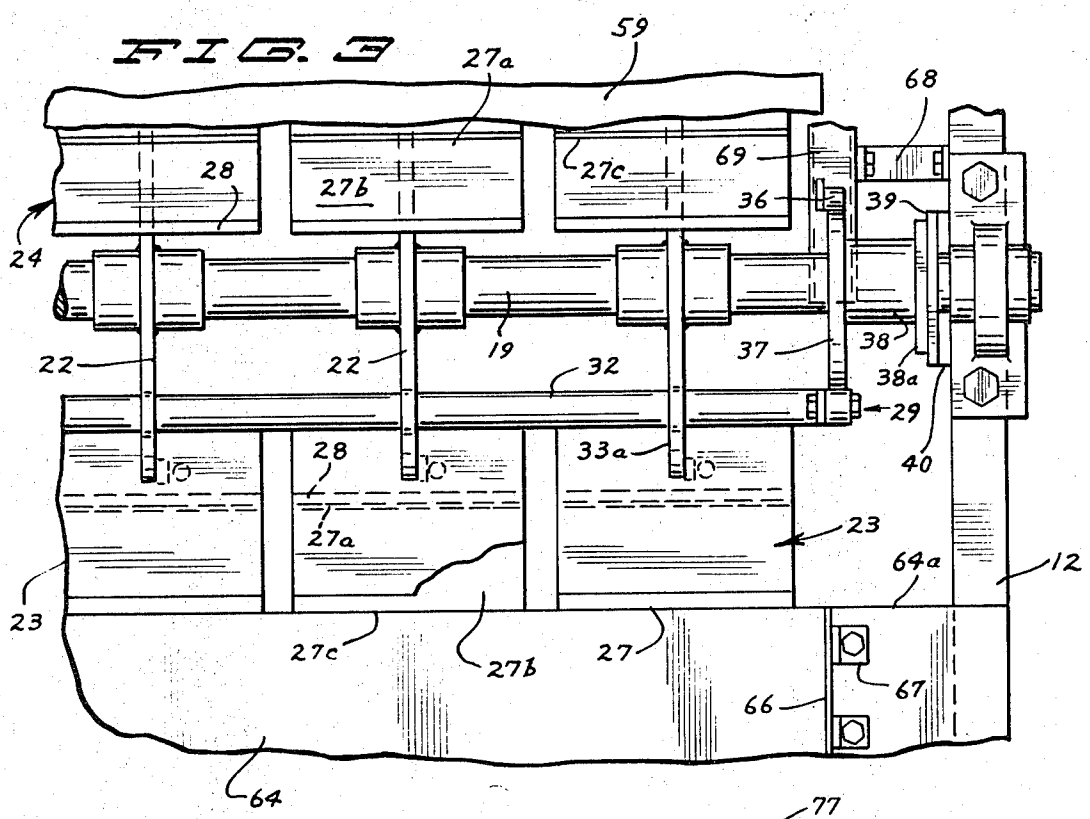
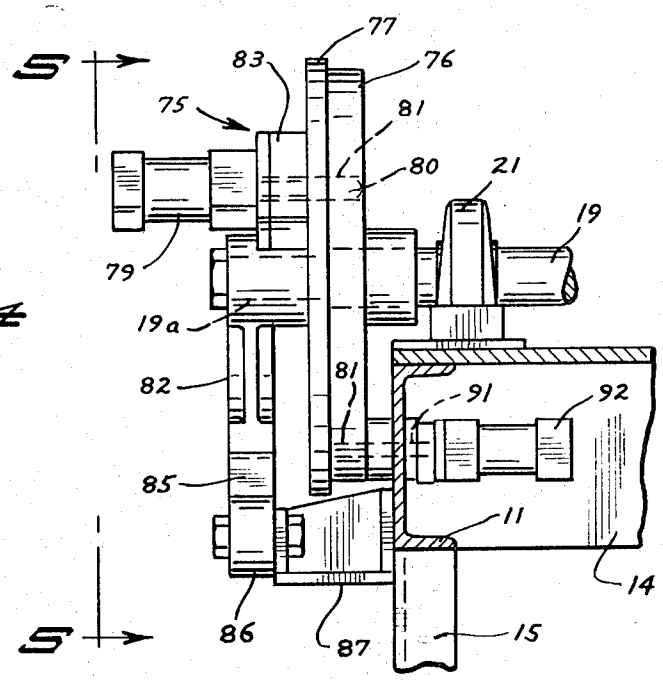


FIG. 4



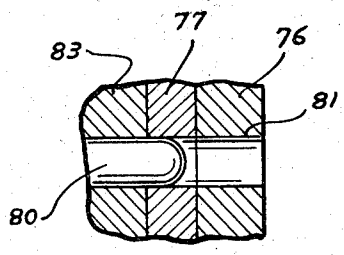


FIG. 6

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GANG SLITTER SAW FOR PAPER PRODUCTS

BACKGROUND OF THE INVENTION

This invention is directed to gang slitter severing of logs of material such as paper and log feeding mechanism. Slitter saws are in use today for cutting lengths of paper products (logs), such as paper toweling, toilet tissue, and like products into specified lengths for consumer use. Such prior art machines cut one piece at a time from the logs and as a result, are not able to hold the logs properly in order to be able to obtain square accurate length, and clean cuts.

SUMMARY OF THE INVENTION

The present invention is directed to improvements in slitter saws so that gang sawing can be accomplished and there will be no shifting of the logs during the sawing operation. This is obtained by holding the logs in a confined manner and closely controlling the rate of feed of the logs through the saw blades. As a result of this invention, the rate of cutting of the above-mentioned type of products into consumer lengths is obtained and also a square accurate length, and clean cut is obtained.

One of the objects of this invention is to provide new and novel feed mechanism for clampingly holding a log and moving a log into contact with a plurality of spaced severing members for substantially simultaneously severing the log into a number of specified lengths. Another object of this invention is to provide new and novel mechanism for clampingly holding a log and moving the log through an arcuate path into contact with a gang slitter saw for severing the log into a number of specified lengths. Still another object of this invention is to provide new and novel pocket type mechanism that automatically opens to facilitate the loading of logs and to discharge the cut lengths.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of the apparatus of this invention, said view being generally taken along the line and in the direction of arrows 1–1 of FIG. 2;

FIG. 2 is a fragmentary view, part in cross section, generally taken along the line and in the direction of arrows 2–2 of FIG. 1;

FIG. 3 is a fragmentary top view generally taken along the line and in the direction of arrows 3–3 of FIG. 1;

FIG. 4 is an enlarged fragmentary view of the driving and indexing mechanism, said view being generally taken along the line and in the direction of arrows 4–4 of FIG. 5;

FIG. 5 is a side view of a portion of the structure illustrated in FIG. 4, said view being generally taken along the line and in the direction of arrows 5–5 of FIGS. 2 and 4; and

FIG. 6 is an enlarged, fragmentary cross-sectional view generally taken along the line and in the direction of the arrows 6–6 of FIG. 5 other than the drive pin is in an extended condition.

Referring now to FIGS. 1—3, the gang slitter saw apparatus of this invention includes a frame generally designated 10, said frame having a pair of upper horizontal side frame members 11 and 12 and horizontal transverse front frame member 13 and rear frame member 14, that are joined together to form an open box type frame portion. The frame members 11—14 are mounted on uprights 15.

The drum shaft 19 of a drum generally designated 20 has its opposite ends journaled for rotation by bearing members 21 that are respectively mounted on frame members 11 and 12 intermediate frame members 13 and 14. Where, such as illustrated in this application, the log is to be cut into four lengths (rolls), the drum has four axially spaced annular plates 22 secured to the shaft 19 to rotate therewith. The annular members mount three equally angularly spaced sets of a plurality of pockets, respectively designated 23, 24 and 25, to rotate therewith. Each annular member has three equally angular pockets, one each of the sets 23, 24, 25. Each pocket 27 includes a first generally planar plate 27*a* mounted by a bracket 28 that is in turn mounted on the outer peripheral edge portion of the respective annular member 22. Each plate 27*a* has its generally planar outer surface that is generally parallel to the axis of elongation of the drum shaft and generally perpendicular to a radius of curvature of the annular member that passes through the drum shaft central axis. Each pocket also includes a second plate 27*b* having a horizontal edge joined to the trailing edge of the first plate to extend perpendicular to the first plate and outwardly from the respective annular member generally parallel to the radius of curvature mentioned in the preceding sentence. The pockets are mounted by the annular members to extend axially outwardly thereof substantially the same distance on each axial side of the respective annular member 22. Further, the pockets 23 are all in axial alignment as are the pockets 24 and 25 respectively. Additionally, the pockets on adjacent annular members 22 are axially spaced.

For releasably retaining the logs in the pockets as the pockets are rotated, for each set of pockets 23, 24 and 25 there is respectively provided a log holder assembly 29, 30 and 31 respectively generally designated. Each log holder assembly includes a pivot shaft 32 that is extended through apertures in the annular members to be mounted by said annular members radially outwardly of shaft 19 and parallel thereto. Each shaft is located radially intermediate the drum shaft 19 and the respective set of pockets, and angularly in advance of the leading edges of the respective set of pockets. For each pocket of the respective set of pockets, there is provided a log holding plate 33 that is mounted by the shaft 32 to extend radially outwardly therefrom to, in a log clamping position, extend approximately parallel to the respective pocket plate 27*b* and extend substantially the same distance outwardly from the respective annular member 22. That is, in a log clamping position the outer horizontal edge of plate 33 is located substantially the same radial distance outwardly of the drum shaft axis as the outer horizontal edge 27*c* of plate 27*b*. Each plate 33 has a central slot 33*a* to permit the plate extending more closely adjacent the drum shaft than the outer peripheral edge of the annular member and at the same time permit the outer portion of the plate extending axially relative the drum member approximately the same distance that the angular adjacent plate 27*a* extends axially on either side of the drum member 22.

In order to resiliently retain the plates 33 in a log clamping position, the one ends of coil springs 34 are attached to plates 33 and the opposite ends attached to a lug secured to the adjacent bracket 28 at a location angularly intermediate the leading and trailing edges of the first plate 27*a*. The springs are located radially between the plates 27*a* and the drum shaft. In order to move the log holder plates between a log clamping position and a log release position that the outer horizontal edge of the log holder plate is located relative plate 27*b* a substantially greater distance angularly in advance of said plate 27*b* than in a log clamp position, for each pivot shaft 32 there is provided a radial arm 35 that has one end keyed to the pivot shaft and an opposite end that mounts a cam follower roller 36. Arm 35 is mounted on the end of shaft 32 that is axially more closely adjacent the bearing 21 on frame member 12 than any of the pockets mounted on the drum. For pivoting the respective pivot shaft 32 in a direction to move a set of log holder plates to the log release position at the proper time, there is provided a cam 37 having a peripheral cam surface of a shape to, through the cam follower and pivot shafts 32, move the log holder plates in a manner to be described hereinafter. The cam 37 is stationarily mounted by being attached to a mounting member 38 that has an opposite flange 38*a* welded to an upright bar 39, the lower end of the bar being bolted to a plate 40 which in turn is mounted by frame member 12. Members 37—39 have axially aligned apertures (not shown) for the drum shaft to rotatably extend thereto. Cam 37 has a cam surface that includes a first cam surface portion 37*a* that is curved inwardly toward the drum shaft axis in the direction of arrow 96, that is of a constant radius intermediate surface portions 37*a*, 37*b*, surface portion 37*b* being curved outwardly of

the drum shaft axis in the direction of arrow **96**, and thereafter is of a constant larger radius than the first mentioned radius intermediate surface portions **37***b*, **37***a*.

Mounted on frame members **11** and **12** rearwardly of bearing members **21** are bearing members **45** which journal for rotation the shaft **41** of the circular saw assembly generally designated **42**. The shaft **41** is mounted to extend parallel to the drum shaft. Secured to shaft **41** to rotate therewith is a plurality of circular saw blades **44**. As may be noted from FIGS. **1** and **2**, the saw blades are axially spaced such that one blade extends axially intermediate each pair of adjacent annular members **22** in the area between the path of movement of axially adjacent sets of pockets. Also intermediate the frame member **11** and the axial adjacent edges of the pockets mounted on adjacent annular member, and axially intermediate frame member **12** and the axially adjacent edges of the pockets mounted on the adjacent annular member, there is provided a circular saw blade. As a result of providing four axially aligned pockets and five circular saw blades, four rolls of equal lengths will be cut from a log carried by, for example, pockets **23** as will be described hereinafter.

In order to drive the saw blades in the direction of the arrow **47** (direction opposite the direction the drive shaft is rotated for transferring logs), there is provided a pulley sheave **48** that is keyed to shaft **41**, there being a belt **49** extended around sheave **48** and a sheave **50** that is mounted on the motor shaft of a motor **51**. The motor is mounted on a base plate **52** that along one edge portion is pivotally connected at **53** to upright brackets **54** on a transverse frame member **55**. The axis of pivot **53** is parallel to the axis of shaft **41**. The transverse frame member **55** at either end is mounted by lower side frame members **56** that in turn are mounted by uprights **15**.

In order to confine the log in axially aligned pockets as the log is being sawed, there is provided a shoe **59** that at each end is attached to a right angle bracket **61** that in part extends across shaft **41**, brackets **61** being bolted to brackets **62** which in turn are mounted by frame member **14**. The shoe has a top horizontal edge **59***a* portion that extends to a substantially higher elevation than the maximum elevation of pocket members as the pocket members are moved through their path of movement; a lower horizontal edge **59***b* located horizontally intermediate shafts **19**, **41** and at a substantially lower elevation than said shafts; and an arcuate curved central portion **59***c* that curves about the axis of rotation of shaft **19**. The radii of curvature of central portion **59***c* is only slightly greater than the radial distance of the outer horizontal edge of pocket members **27***b* from the central axis of shaft **19**. The shoe has slits (not shown) for the circular saw blades to in part rotatably extend therethrough.

To facilitate feeding the logs into the pockets, there is provided a generally rectangular table **64** that is mounted by frame members **11**—**13** at the loading station. The rear edge **64***a* of the table is located closely adjacent the path of movement of the outer edges **27***c* of pocket members **27***b*; and is at an elevation to be substantially level with respective sets of pocket members **27***b* when the pocket members are in a horizontal condition horizontally intermediate shaft **19** and frame member **13** such as illustrated in FIG. **1**. In order to transversely align the logs relative the pockets and saws, there are provided end plates **66** that are mounted by brackets **67** to extend above the table, said brackets being bolted to the table. The transverse spacing of the end plates is substantially the same as the length of the log to be cut, and is greater than the axial spacing of the axial outer two saw blades on the saw blade shaft. Further, the axial length of arcuate portion **59***c* of the shoe is substantially the same as the transverse spacing of the end plates.

In order to separate the trimmings (two end pieces of the cut log from the finished cut lengths), there is provided a chute **69** intermediate each end circular saw blade and the respective adjacent frame member **11**, **12**. Each chute is mounted on a respective frame member by a bracket **68** being bolted to the frame member. The chute has an inlet **69***a* opening toward the central portion **59***c* of the shoe and in spaced relationship to the shoe to receive the cut end piece as it is severed from the log. The chute extends partially across the conveyor assembly generally designated **70** to discharge through an outlet **69***b* onto a section **70***a* of the conveyor. The conveyor assembly also has a section **70***b* for receiving the finished cut lengths of log that are directed thereonto by the shoe and the movements of the pockets relative to the shoe. If necessary, due to the spacing of the outlet **69***b* from the conveyor, the shoe has a cutout provided in one of the walls (not shown) that opens in the direction of the movement of the trimmings conveyed by the conveyor. Since the conveyor assembly does not form a part of this invention, it will not be further described.

In order to index each set of pockets **23**, **24** and **25** for the respective series of pockets being loaded and moving the pockets to convey the logs to be cut, there is provided the drum drive mechanism generally designated **75** (see FIGS. **4** and **5**). The drive mechanism **75** includes an indexing plate **76** that is keyed to the end of the shaft **19** outwardly of frame member **11** for driving said shaft. A reduced diameter extension **19***a* of the drum shaft **19** rotatably mounts a drive plate **77** to have one annular surface closely adjacent the index plate. A two way acting piston cylinder combination **79** has a cylinder thereof fixedly attached to a block **83** that in turn is fixedly attached to the drive plate adjacent its outer peripheral edge portion such that the cylinder extends horizontally outwardly of the drive plate in a direction opposite the index plate. The piston rod of the combination **79** mounts a drive pin **80** for movement between a retracted position completely withdrawn from the drive pin aperture **81** in the index plate, and a second position extended into said aperture for rotating the index plate as the drive plate is rotated. There are provided three equally angularly spaced drive pin apertures **81** in the index plate, *i.e.* one for each set of pockets **23**, **24** and **25**.

A drive gear segment **82** is rotatably mounted on extension **19***a* and is welded to the drive plate, said segment having an arcuate toothed surface **82***a* forming a matched fit with the tooth portion of the horizontal rack **85**. A backup roller **86** is rotatably mounted by bracket **87** on the frame member **11** in a position for supporting the rack in driving engagement with the segment teeth **82***a*. In order to horizontally reciprocate the rack **85** and thereby rotate the drive gear segment about shaft extension **19***a*, the rack is connected to the piston rod **87** of a piston cylinder combination that includes a cylinder **88**. The cylinder is mounted on frame member **11**.

In order to releasably retain the index plate in one of three given angular positions, a two way acting piston cylinder combination **92** is mounted on frame member **11** for moving a holding pin **91** between a retracted position clear of the respective aperture **81** in the index plate and an extended position extending into the aperture **81** to prevent the index plate rotating relative the frame. The piston cylinder combinations are mounted relative one another such that when the index plate is in a position to have the drive pin extended into one aperture **81**, a second aperture **81** is located in a position to have the holding pin extended thereinto.

The structure of the apparatus of this invention having been described, the operation thereof will now be set forth. For the purpose of facilitating the description of the operation of this invention, it will be assumed that the pockets are in the relative positions illustrated in FIG. **1**, that the drive pin is retracted, that the holding pin **91** is extended into one index plate aperture **81**, that the rack is in the retracted position of FIG. **5**, and that the saw shaft is being drivingly rotated in the direction of the arrow **47**. Accordingly, at this time the drum **20** is in a dwell condition. Now, an elongated log is pushed over table **64** to have its ends located intermediate end plates **66**; and thence onto the plates **27***b* of the pockets **23** to be supported by said pockets and against plates **27***a* so that the axis of elongation of the log is generally parallel to the drum shaft. At this time the holding plates **33** adjacent pockets **23** are in a log release position due to the cam follower thereof bearing

against a surface portion of cam 37 that extends further radially outwardly of the drum shaft axis than other surface portions of said cam. Now through suitable controls (not shown), air under pressure is applied to the drive pin cylinder to move the drive pin into the adjacent aperture 81 of the index plate, to the holding pin cylinder to retract pin 91, and thereafter to the rack cylinder 88 to extend its piston rod and thereby move the rack 85 in the direction of arrow 97. This rotates the drive gear segment 82 and, through the drive plate and index plate, rotates the drum shaft a first angular increment of 120° in the direction of arrow 96. As the drum shaft is rotated, the cam follower 36 for the pockets 23 is angularly moved, the follower moves off the radially enlarged portion of the cam to a location radially more closely adjacent the axis of the drum shaft. As a result the coil springs for pockets 23 move holder plates 33 for the pockets 23 about the axis of pivot shaft 32 to clamp the log in the pockets against plates 27*b* as the cam follower moves over cam surface portion 37*a*.

Shortly after the log is thus clamped in the pocket, the pockets 23 are rotated (moved upwardly and rearwardly) adjacent the trailing edge of the shoe; and as the pockets 23 are further advanced, the pockets are moved adjacent arcuate portion 59*c* that retains the log adjacent plates 27*a*. That is, within a few degrees after the log has been moved by the pockets 23 to its most elevated position, it is moved to be located between the adjacent part of the shoe and plates 27*a*. After the pockets 23 have been rotated to the angular position illustrated for pockets 24 in FIG. 1, the movement of the rack 85 in the direction of arrow 97 is discontinued; air under pressure is applied to cylinder 92 to move the holding pin 91 into the adjacent aperture 81 of the index plate; air under pressure is applied to the drive pin piston cylinder combination 79 to retract the drive pin 80 from the aperture 81 of the index plate; and air under pressure is applied to the piston cylinder combination 88 to retract the rack. As the rack is retracted (moved in the direction opposite arrow 97) the drive gear segment and the drive plate are rotated about the drum axis in the direction opposite arrow 96; however, the index plate remains stationary since the holding pin is extended into one of the apertures thereof.

Thence, a second log is moved into pockets 25 in a manner described with reference to pockets 23, and the index mechanism operated to rotate the drum in the direction of arrow 96 to advance the drum a second angular increment of 120°. As the drum is angularly advanced the second angular increment, the pockets 23 rotate the log about the drum axis to a lower elevation and rearwardly into engagement with the circular saws which saw the log into specified lengths. The log initially contacts the saws when it has been moved by the pockets 23 approximately 135° from the dwell position of said pockets at the loading station. After the log has been severed into lengths, the movement of the severed lengths by the pocket 23 brings the trimmings (the two end pieces of the log) adjacent the inlets 69*a* of the chute 69 to, through gravity, fall through said chutes and be discharged through the outlet 69*b* onto the section 70*a* of the conveyor assembly 70. As may be noted from FIG. 2, the shoe extends axially outwardly of the outermost saws for directing the trimmings into the chutes. As the drum continues to rotate, the pockets are moved adjacent to the angular position illustrated for pockets 25 in FIG. 1. At this time, due to the configuration of the cam surface of the cam, the cam follower 36 for pockets 23 as it moves over cam surface portion 37*b* is forced to move further outwardly of the drum shaft against the action of springs 34 to thereby pivot the holder plates 33 for said pockets away from the leading edges of the pocket plates 27*a*. This releases the severed lengths of logs, and since at this time the severed lengths of the log are adjacent the leading edge 59*b* of the chute, the severed lengths are free to, and do drop onto section 70*b* of the conveyor. Thus as the pockets are rotated, the holding plates are automatically moved to an open position for discharging the cut lengths of logs. However, prior to the time that the holding plates are moved to the open position, the logs are positively held in position to prevent shifting during the sawing, and as a result square clean cuts are obtained. That is, during the time from just prior to the angular position illustrated for pocket 24 in FIG. 4 until the holding plates are moved angularly to a position adjacent the leading edge 59*b* of the shoe, the horizontal outer edges of plates 27, the plates 33 and the log carried by the respective pockets slidingly contact the arcuate portion 59*c* of the shoe.

When pockets 23 have been moved to the position illustrated for pockets 25, the holding pin is moved into the adjacent aperture 81 of the index plate, and the drive pin and rack retracted in the manner previously described.

One advantage of moving the log in an arcuate path as it is being cut over translating the log in a straight line as it is being cut is that the log has less contact with the saws and as a result there is less chance of burning the logs along the cut surfaces. Another advantage is that less compacting force is exerted on the log.

The apparatus of this invention can be provided with automatic blade grinders (not shown) for the saw blades, and an automatic mist spray system in part indicated by reference number 99 for spraying a mist on the blades to aid in keeping the blades cool.

To be mentioned is that the logs cut by the apparatus of this invention may be either rectangular or generally circular in cross section. Also, depending on the diameters of the logs to be cut and the diameter of the drum more or less than three plurality of sets of pockets may be used. However, in order to obtain a clean cut it is preferred that the sets of plurality of pockets be angularly spaced such that the drum does not "dwell" at a time the log is only partially severed. Additionally, mechanism for indexing the drum may be other than that described and illustrated.

We claim:

1. Apparatus for severing elongated logs of paper and like products into a plurality of lengths comprising a frame having a loading station and a severing station, first means mounted on the frame for transferring a log from the loading station to the severing station and clampingly holding the log as it is severed, several log severing members, axially elongated second means mounted on the frame at the severing station for mounting said log severing members in axial spaced relationship and operating said severing members to sever the log being clampingly held by the first means into a plurality of lengths at the same time, means for driving said second means, said first means including a drum having a central axis of elongation mounted on the frame for rotation about said central axis, a first plurality of pockets mounted on the drum in axially spaced, axially aligned relationship to rotate with the drum each pocket including a first plate portion extending generally tangentially to the drum, said first plate portion having a leading edge and a trailing edge relative the direction of rotation of the drum and a second plate portion joined to said trailing edge to extend generally perpendicular to the first plate portion and outwardly from the drum, third means connected to the drum to cooperate with the pockets for releasably clampingly holding a log to extend generally parallel to the drum axis as the log is transfered to the severing station and severed into log lengths, the third means including a log holder plate for each pocket, fourth means movably mounted on the drum for mounting the holder plates and moving the holder plates between a log release position and a position abuttable against the respective first plate portion leading edge, operative fifth means for moving the fourth means between a position that the fourth means moves the holder plates to clamp a log in the pockets and a log release position and sixth means mounted on the frame for drivingly rotating said drum.

2. The apparatus of claim 1 further characterized in that each holder plate extends substantially more closely adjacent the drum axis than the first plate portion and that the fourth means includes a shaft for mounting the holder plates, said shaft being pivotally mounted by the drum substantially more closely adjacent the drum axis than the first plate portion.

3. The apparatus of claim 1 further characterized in that the drum has an annular member for each pocket that mounts the respective pocket, the pockets each being of a substantially greater axial dimension than the corresponding axial dimension of the respective annular member and extending axially outwardly of the annular member on each side thereof.

4. The apparatus of claim 1 further characterized in the drum axis is horizontal, that a horizontal table is mounted on the frame at the loading station, that the second plate portions extend generally parallel to the plane of the drum axis and that the table has an edge adjacent the path of travel of the first plate portions and is mounted at an elevation substantially the same as the elevation of the first plate portions in a horizontal condition.

5. The apparatus of claim 1 further characterized in that there is provided a second and third plurality of axially spaced, axially aligned pockets mounted on the drum, the first mentioned, second and third plurality of pockets being angular spaced from one another, and third means for each of the second and third pockets, and that the third means includes means connected to the holder plates to resiliently urge them to a log clamping position.

6. Apparatus for severing axially elongated logs of paper and like products into a plurality of lengths comprising a frame having a loading station and a severing station, several slitter saws, axially elongated first means mounted on the frame at the severing station for mounting the saws in axial spaced relationship and drivingly rotating the saws about a first horizontal axis, an axially elongated mounting member mounted on the frame between the loading station and the severing station for rotation about a second axis generally parallel to the first axis, second means mounted on the mounting member for rotation therewith for clampingly engaging a log at separate axially spaced locations to transfer a log from the loading station and through a path of movement that the saws sever the log into a plurality of lengths, the second means including a plurality of axially aligned, axially spaced pockets mounted on said mounting member, each pocket having a plate extending outwardly of the mounting member general parallel to the plane of the second axis, the plates having outer horizontal edges, third means for releasably clamping a log in the pockets, to extend generally parallel to said axes, a horizontal table mounted on the frame at the loading station, said table having an edge adjacent the path of travel of the plates and being mounted at an elevation that is substantially the same as the plates in a horizontal condition and means mounted on the frame for drivingly rotating the mounting member in a direction that the plate edges are moved angularly upwardly as they pass said table edge.

7. The apparatus of claim 6 further characterized in that the third means includes a holder plate for each pocket and means for mounting the holder plates on the mounting member and moving the holder plates to a log clamping position after the pocket plates have moved angular upwardly of the table, and after the log has been severed, to a log release position.

8. Apparatus for severing axially elongated logs of paper and like products into a plurality of lengths comprising a frame having a loading station and a severing station, several slitter saws, axially elongated first means mounted on the frame at the severing station for mounting the saws in axial spaced relationship and drivingly rotating the saws about a first axis, an axially elongated mounting member mounted on the frame between the loading station and the severing station for rotation about a second axis generally parallel to the first axis, second means mounted on the mounting member for rotation therewith for clampingly engaging a log at separate axially spaced locations to transfer a log from the loading station and through a path of movement that the saws sever the log into a plurality of lengths, the second means including at least two axially spaced, axially aligned pockets mounted on the mounting member, at least two holding plates, third means mounted on the mounting member for mounting one plate angularly adjacent each pocket for movement between a log clamping and a log release position, and means mounted on the mounting member for resiliently urging the holding plates to their log clamping position, means mounted on the frame for drivingly rotating the mounting member in a direction to move the second means upwardly from the loading station, and a shoe mounted on the frame to extend into partial overhanging relationship with the mounting member for cooperating with the pockets and the holding plates to confine a log with the bounds of the pockets and holding plates, said shoe having an arcuate portion in part located intermediate said axes.

9. The apparatus of claim 8 further characterized in that the axial spacing of the two furthermost axially spaced saws is less than the elongated lengths of the log, that the shoe is of a length, in a direction of the first axis, about the same as the log, and that there is provided chute means mounted on frame for directing a severed end portion of a log to a different angular location than a length of log adjacent said end portion.

10. The apparatus of claim 8 further characterized in that a horizontal table is mounted on the frame at the loading station, that each pocket has a plate extending outwardly of the mounting member generally parallel to the plane of the second axis, the pocket plates have outer horizontal edges, said table having an edge adjacent the path of travel of the pocket plates and being mounted at an elevation to be at substantially the same elevation as the pocket plates in a horizontal condition, that said shoe arcuate portion extends to a substantially lower elevation than said table, that said shoe has a leading edge generally parallel to said axes, and that said cam surface is of a shape to move the cam follower to pivot said shaft to move the holding plates to a log release position as the pocket plates are moved angularly adjacent said shoe leading edge.

11. Apparatus for severing elongated logs of paper and like products into a plurality of lengths comprising a frame having a loading station and a severing station, first means mounted on the frame for transferring a log from the loading station to the severing station and clampingly holding the log as it is severed, several log severing members, axially elongated second means mounted on the frame at the severing station for mounting said log severing members in axial spaced relationship and operating said severing members to sever the log being clampingly held by the first means into a plurality of lengths at the same time, means for driving said second means, said first means including a drum having a central axis of elongation mounted on the frame for rotation about said central axis, said drum having a drum shaft, a first plurality of pockets mounted on the drum in axially spaced, axially aligned relationship to rotate with said drum, a second plurality of pockets mounted on the drum in axially aligned, axially spaced relationship to rotate with the drum, said second pockets being mounted on the drum in substantial angularly spaced relationship to the first plurality of pockets, said pockets being mounted on the drum to open outwardly thereof, and third means connected to the drum to cooperate with the pockets for releasably clampingly holding a log to extend generally parallel to the drum axis as the log is transferred to the severing station and severed into log lengths, said third means including fourth means cooperating with the first plurality of pockets for releasably clampingly holding a log in said first pockets and fifth means cooperating with the second plurality of pockets for releasably clampingly holding a log in said second pockets, the fourth and fifth means each including a plurality of log holder plates, sixth means movably mounted on the drum for mounting the holder plates and moving them between a log release position and a log clamping position and operative seventh means for moving the sixth means between the log release and log clamping positions, eight means on the frame for automatically operating the seventh means of the respective fourth and fifth means to operate the holding plates for the respective plurality of pockets to a log release position as the pockets are moved by the drum from adjacent the severing station toward the loading station, and means

mounted on the frame for drivingly rotating said drum that comprises ninth means connected to the frame and mounted on the drum shaft for rotating the drum shaft a given angular amount, a reciprocal power drive member and means connected to said reciprocal power member and the ninth means

to impart a driving force through the ninth means to the drum shaft as the power member moves in one direction and discontinues the application of a driving force as the power member moves in the opposite direction.