J. McINTOSH.

CUT-OFF MACHINE.

APPLICATION FILED NOV. 22, 1909.

977,669.

Patented Dec. 6, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

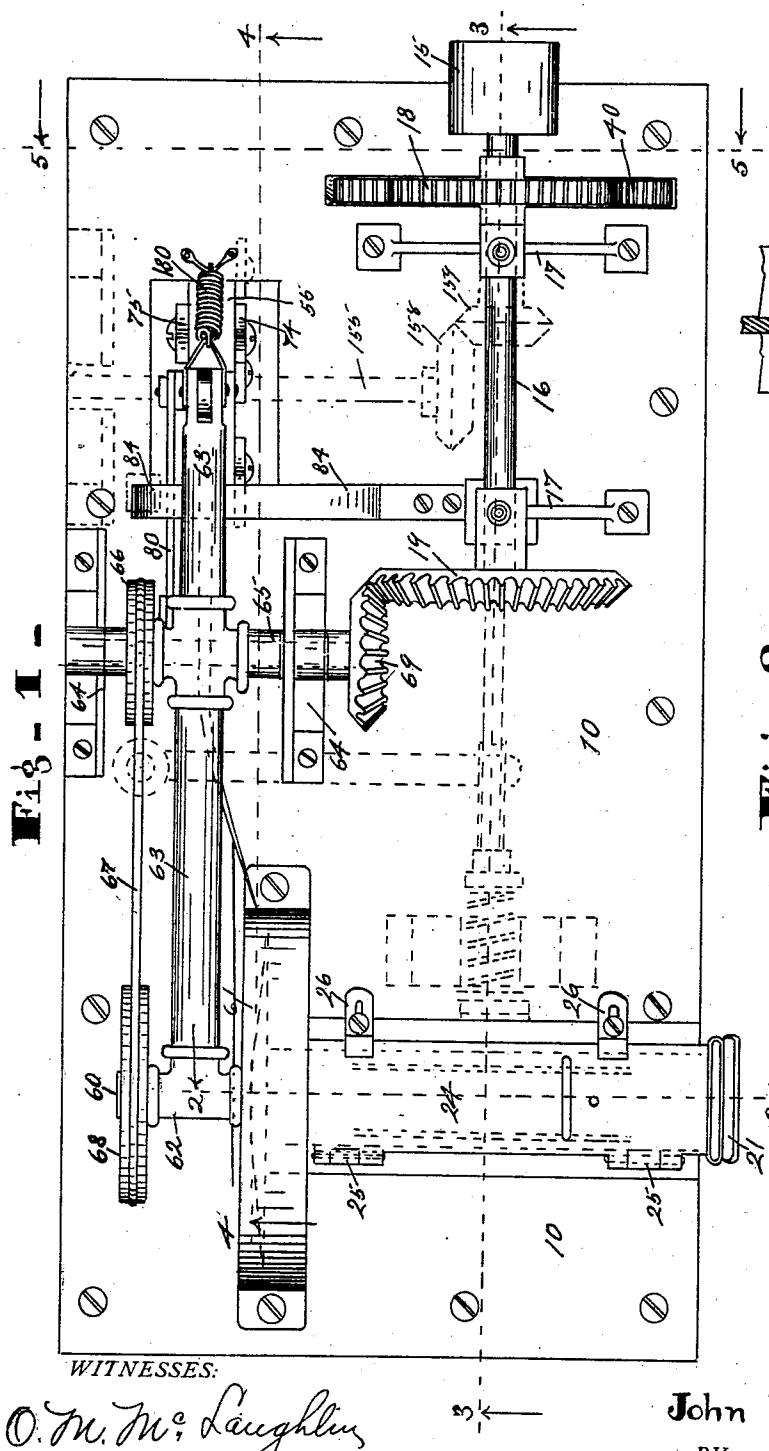
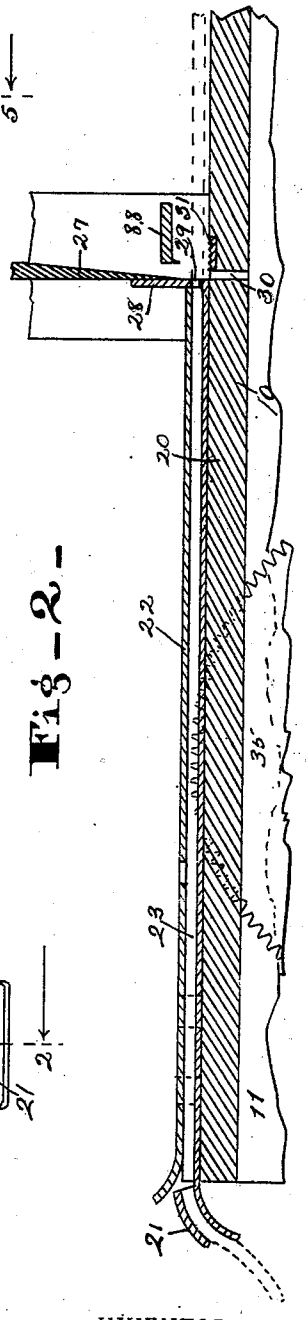


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

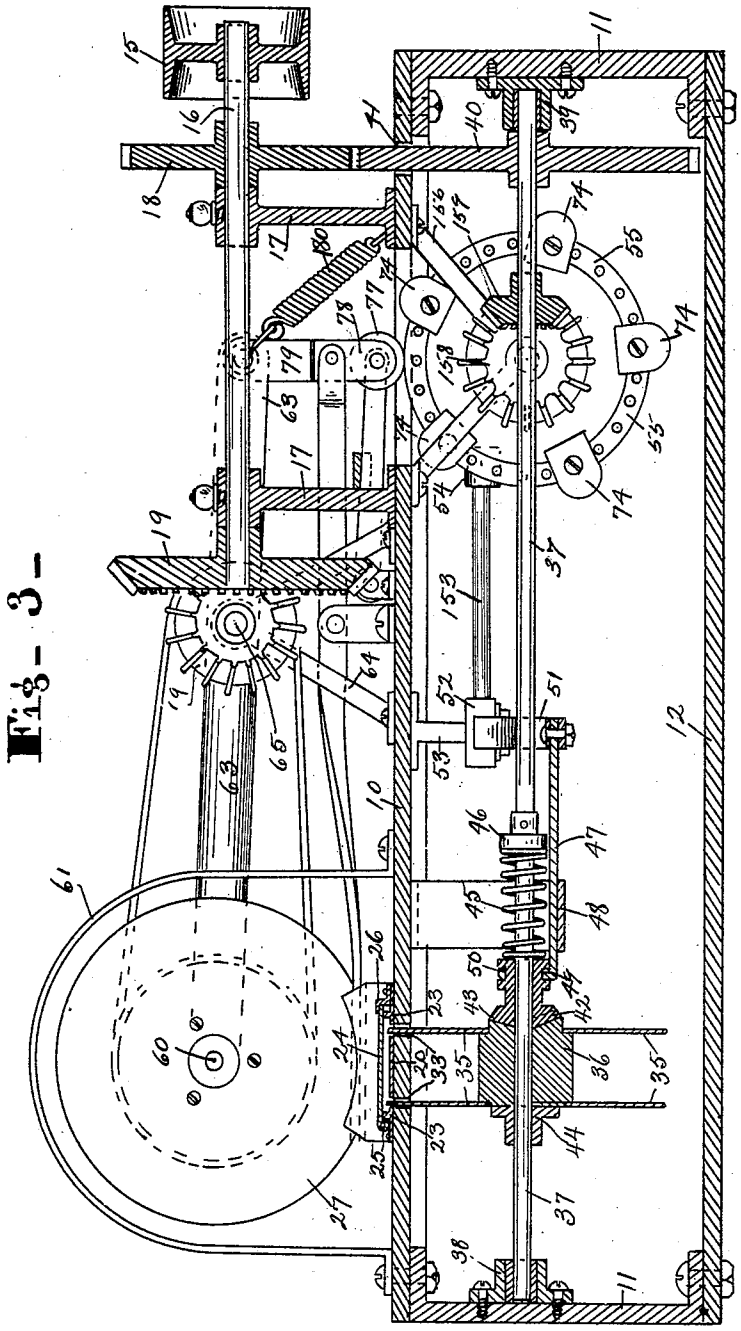
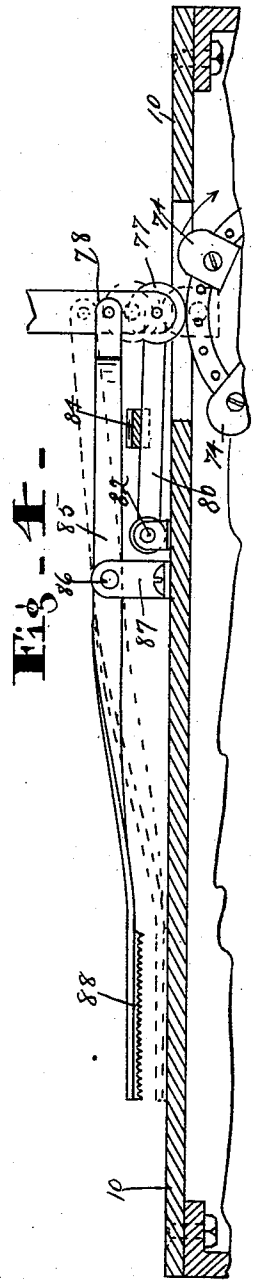


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 6.

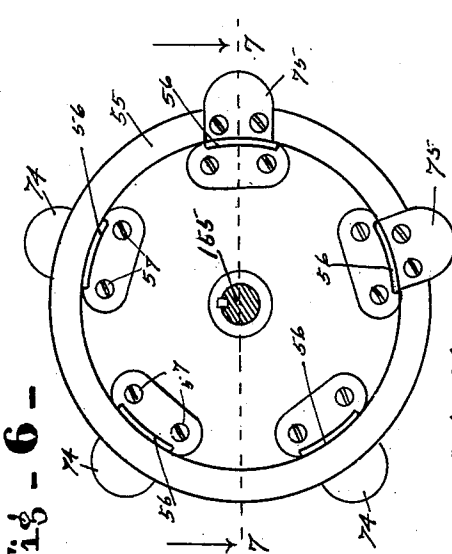


Fig. 7.

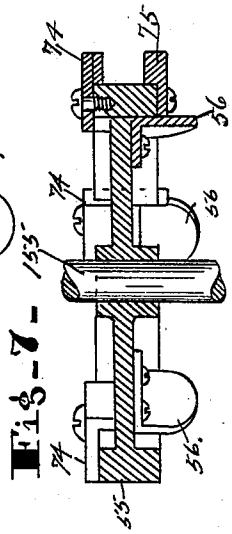


Fig. 8.

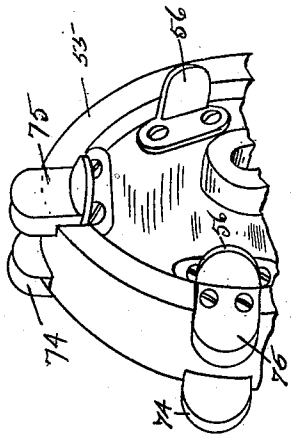


Fig. 5.

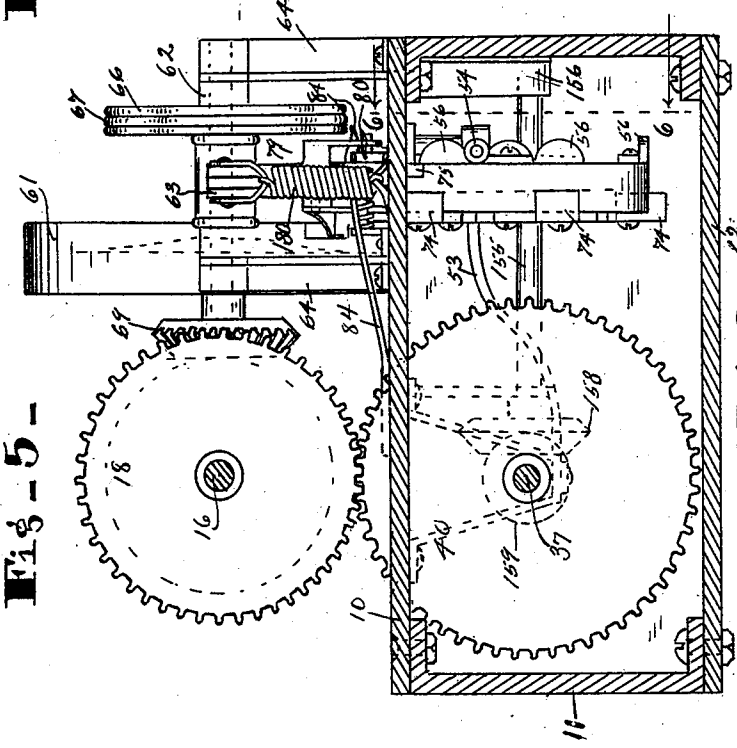
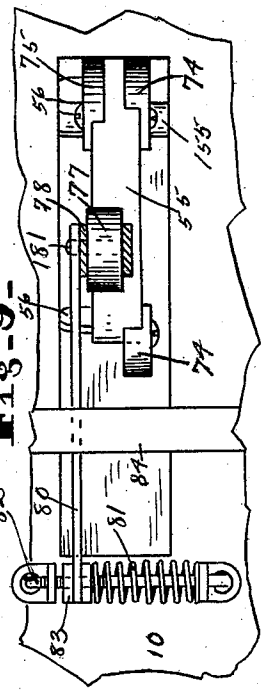


Fig. 9.



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# UNITED STATES PATENT OFFICE.

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## CUT-OFF MACHINE.

977,669. Specification of Letters Patent. **Patented Dec. 6, 1910.**

Application filed November 22, 1909. Serial No. 529,473.

*To all whom it may concern:*

Be it known that I, JOHN McINTOSH, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Cut-Off Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

The object of this invention is to provide a machine capable of automatically cutting strips of cloth and the like in suitable lengths variable by easy adjustment, and the machine herein shown was built for the purpose of cutting shoulder straps for suspenders for overalls in an overall factory. These straps for suspenders are usually formed of two lengths, five inches and twenty-one inches, substantially, and these lengths are cut from very long strips of material, which have been already stitched or treated ready for use when cut in proper lengths. This work has heretofore been done, so far as I am aware, by forming said strips into a pile and cutting the pile with a stroke of a large knife operated by hand.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings Figure 1 is a plan view of the machine. Fig. 2 is a transverse section on the line 2—2 of Fig. 1, but on a larger scale. Fig. 3 is a vertical section on the line 3—3 of Fig. 1. Fig. 4 is a vertical section through a portion of the machine on the line 4—4 of Fig. 1. Fig. 5 is a transverse section on the line 5—5 of Fig. 1. Fig. 6 is a vertical section on the line 6—6 of Fig. 5, showing the cam wheel in side elevation. Fig. 7 is a section on the line 7—7 of Fig. 6. Fig. 8 is a perspective view of the upper half of Fig. 6. Fig. 9 is a plan view of a portion of the table top and parts thereon, some of the upper parts being removed.

In the drawings there is shown a frame including a table 10, end pieces 11 extending downwardly therefrom, and a bottom piece 12 connected with the end pieces.

Power for driving the machine comes from some suitable source to the driving pulley 15, which is secured on the shaft 16 mounted in suitable bearings in the posts 17 in the right-hand portion of the table 10. Said shaft 16 carries near its right-hand end a spur gear 18 and at its left-hand end a bevel gear 19.

Across the left-hand end there is secured suitable guiding means through which the strips of material to be cut are moved or conveyed. This guide consists of a bottom plate or strip 20 secured on the table 10 and curved downwardly at its entrance end, see the left-hand part of Fig. 2. A strip 21 extends across said turned end of the plate 20 and is spaced above it so that the strip of material is fed between the bar 21 and the curved end of the plate 20. There are upwardly extending flanges 23 on the side portions of said plate 20, see Fig. 3, between which the strip moves. There is a top plate 24 hinged at one side edge at 25 and adapted to fold over the plate 20, and its free edge is caught and held by sliding catches 26. These parts form a passageway through which the strip is moved from the left toward the right, as shown in Fig. 2, and under a circular knife or cutting disk 27 that is mounted above the table 10, and its lower portion overlaps a stationary vertical guide plate 28 extending across and above the passageway and at the end of the guiding means just described, and has a slot 29 through which the material passes. On the right-hand side of said plate 28 there is a vertical slot 30 through the table for the play and movement of the knife 27, and immediately to the right of that there is a fixed plate 31 over which the cloth moves. The right-hand end of the plate 20 and the left-hand edge of the plate 31 support the cloth while the knife cuts through it and penetrates the small space or gap 30 between said parts 30 and 31, somewhat like die construction.

The means for feeding the cloth is located below the table 10, see Fig. 3. There are two transverse slots 33 in the table top and in the plate 20 of the guide for the strip to be cut, through which the upper portions of a pair of toothed feeding wheels 35 project and operate. These wheels are spaced apart so that one will engage the strip to be fed through the machine near each edge. The feeding wheels are faced on a hub 36 that is secured to a shaft 37, having a bearing 38 on one end portion 11 of the frame, and a bearing 39 on the other end portion 11. Said shaft is driven by

the spur gear 40 on the right-hand end of said shaft that projects through the slot 41 in the table top into meshing engagement with the gear 18 on the driving shaft. Hence the shaft 37 turns all the time, but the hub 36 is loosely mounted thereon, and therefore, the feeding wheels 35 do not revolve all the time but only when engaged by the clutch jaw 42, which engages the clutch jaw 43 of the hub 36. A collar 44 is rigidly secured on the shaft on the opposite side of the hub. The clutch 42 slides on the shaft and is pushed in engagement by the spring 45 on the shaft that is held in place by the collar 46.

The clutch 42 is disengaged after the strip has been fed far enough to bring it into the right cutting position, and the disengagement continues while the strip is being cut, and then the clutch again engages the hub 36 and operates the feeding wheel to move the strip up to another cutting position. The disengagement of the clutch is caused by the bar 47, which reciprocates in a bracket 48 extending down from the underside of the table top 10 and surrounding the shaft 37 and the spring 45. The bar 47 has an upturned yoke 49 that fits in a groove 50 around the shank of the clutch. Said bar 47 is withdrawn by a horizontal arm 51 that extends from a head 52 oscillatably mounted on the post 53 that extends downwardly from the table 10, see Fig. 3. The head 52 and arm 51 are oscillated by the rod 153, which on its free end carries a roller 54 which runs on the side of the rim of a cam wheel 55 and at periods is pushed away from the rim of said wheel by cam lugs 56 that project laterally from the cam wheel and are secured adjustably to the side of the cam wheel and within the flanged rim by screws 57. In the machine herein shown there are five of said cam lugs disposed equidistant around said cam wheel and will therefore stop the feed of the cloth once about every five inches.

Returning now to the cutting mechanism, the cutter 27 is mounted on a shaft 60 so as to revolve, and is covered by a guard 61 secured to the table. The shaft 60 is mounted in a transverse bearing 62 on the end of an arm 63 over and parallel with the table top and fulcrumed between its ends on a horizontal shaft 65 mounted in the A-shaped bearing brackets 64 rising from the top of the table 10. Means hereafter explained are employed to actuate the right-hand end of said rod 63, as appears in Fig. 1. On the shaft 65 a sheave pulley 66 is secured which carries a cord or belt 67 running to a pulley 68 on the shaft 60 for revolving the knife 27. The shaft 65 is driven by bevel gears 69 thereon meshing with the bevel gears 19, which has been heretofore described.

Referring to Fig. 3, the rod 63 is oscillated vertically by peripherally extending cam lugs 74 and 75 on the cam wheel 55, which lugs force upwardly a roller 77 on the lower end of a small rectangular frame 78 from which a connecting bar 79 extends to the rear end of the rod 63. The bar 79 is pivoted at its upper end to the rod 63 and at its lower end in the frame 78. In this way the right-hand end of the rod 63 is pushed upwardly and the left-hand end pushed downwardly, and the spring 180 returns the rod, said spring being attached at its upper end to the rod 63 and at its lower end to some part of the table 10.

The cam lugs 74 and 75 are arranged in two series. The lugs 74, forming one series, are located near one side edge of the periphery of the cam wheel 55, and there are five of these lugs equidistant, and the mechanism is so arranged that they will operate the knife so as to cut substantially five strips. The other series 75 include only two lugs and are located near the other side edge of the periphery of the cam disk 55 and are spaced the same distance apart as the lugs 74. Consequently the lugs 75 will operate the knife twice during each revolution of the cam wheel and will cut the material into two different lengths, substantially five inches and twenty-one inches. The five-inch strip will be fed through the machine while the roller 77 is traveling on the cam disk from one lug 75 to the next one, and the material will be fed twenty-one inches while said roller is traveling from the last-mentioned lug 75 to the first-mentioned lug. While the length of operation is described as five inches for the short lengths, it is slightly more than that, as four spaces between the lugs 74 and the long space between the lugs 75 make up twenty-one inches or four times the short space between the lugs 75 or the space between any pair of the lugs 74.

The roller 77 is so mounted as to be shifted transversely across the periphery of the cam wheel so as to bring the roller into position to be operated by either series of lugs but never by both. When it is in position to be actuated by the lugs 75, a continuous operation of the machine will cut alternately a short five-inch strip and a long twenty-one-inch strip. When the roller is shifted to the other side of the cam disk, it will cut five-inch strips repeatedly.

The shifting of the roller 77 is effected by the arm 80 and spring 81 in one direction, that is, to the position shown in Fig. 9, when it is out of alinement with the lug 75. The arm 80 is at one end mounted in connection with the lower part of the frame 78, preferably on the spindle 181 of the roller 77, and at the other end on the rod 82 secured at each end on the frame or table 10. The spring 81 is coiled about the rod 82 and lies between one end of said rod and the bar 80, so that it tends to push the bar over to one

side and that bar shifts the roller 77. For this purpose there are nuts 83 on the rod 82, one on each side of the bar 80 to hold said bar 80 at a right angle to the rod 82. The bar 80 and the roller 77 are pushed back by hand from the position shown in Fig. 9, where it rides over the lug 75 to a position where it will ride over the lug 74, and it is held in that position by the spring catch 84, see Fig. 5, said catch being secured to one end of the table 10, and at the other end adapted to catch over the bar 80. Therefore, when the spring catch 84 is in the position shown in Fig. 5, it will hold the roller in position to travel over the lugs 75, but by lifting the free end of the spring catch 84 out of engagement with the bar 80, the spring 81 will immediately throw the roller 77 over to the position shown in Fig. 9, so it will travel only over the lug 74.

The cam wheel 55 is keyed to the shaft 155, which is mounted in the hanging bearings 156 secured to the upper part of the frame. On the inner end of the cam shaft 155 there is a bevel gear 158 meshing with the bevel gear 159 on the shaft 37, the shaft 37 being driven by means heretofore described. Through these gears the cam wheel 55 is operated.

The bar 85 is fulcrumed between its ends by the pin 86 to the post or bracket 87 extending up from the table top 10, and at one end is shifted to the frame 78, so that it will be vertically oscillated or removed whenever the roller 77 runs over one of the lugs 74 or 75. At the other end of said bar 85 there is a foot 88 located at the outer side of the rotary cutter 27. Normally the bar 85 holds the foot 88 out of contact with the strip to be cut and while the strip is being fed through under the cutter 27, but when the roller 77 runs over one of the lugs 74 or 75 and throws the cutter 27 down in position to cut the strip, it simultaneously actuates the bar 85 and throws the foot 88 down upon the material to hold it stationary. It is to be remembered that at the same time, the clutch 42 is out of gear and the mechanism for feeding the strip has ceased operation, so that the strip is stationary and is held down by the foot 88 while being cut.

What I claim as my invention and desire to secure by Letters Patent is:

1. A machine for cutting a strip of material into sections or lengths including a cutter frame movable into and out of cutting position, a cutter mounted in said frame, means for the continuous operation of the cutter, a feeder capable of being continuously operated for feeding the strip to the cutter, means for moving the cutter frame into cutting position at predetermined intervals, and means for stopping the feeder while the cutter frame is in cutting position.

2. A machine for cutting a strip of material into sections or lengths including a cutter frame movable into and out of cutting position, a cutter mounted in said frame, means for the continuous operation of the cutter, a feeder capable of being continuously operated for feeding the strip to the cutter, means for alternately actuating the feeder and for moving the cutter frame into cutting position at predetermined intervals and means for stopping the feeder while the cutter frame is in cutting position.

3. A machine for cutting a strip of material into sections or lengths including a cutter frame movable into and out of cutting position, a cutter mounted in said frame, means for the continuous operation of the cutter, a feeder capable of being continuously operated for feeding the strip to the cutter, a single means for temporarily stopping the feeder and for moving the cutter frame into cutting position simultaneously at varying but predetermined intervals.

4. A machine for cutting a strip of material into sections or lengths including a cutter movable into and out of cutting position, a feeder for feeding the strip to the cutter, means for moving the cutter into cutting position, means for temporarily stopping the feeder during the cutting of the strip, a cam wheel, and lugs on said cam wheel positioned to time the movement of the cutter and the stopping of the feeder.

5. A machine for cutting a strip of material into sections or lengths including a cutter movable into and out of cutting position, a feeder for feeding the strip to the cutter, means for moving the cutter into cutting position, means for temporarily stopping the feeder during the cutting of the strip, a cam wheel, lugs on said cam wheel at equal intervals for actuating the feeder stopping means, and lugs thereon for actuating the cutter moving means, the space between any two of said last-mentioned lugs being equal to or a multiple of the space between any two of the lugs for actuating the feeder stopping means.

6. A machine for cutting a strip of material into sections or lengths including a cutter movable into and out of cutting position, a feeder for feeding the strip to the cutter, means for moving the cutter into cutting position, means for temporarily stopping the feeder during the cutting of the strip, a cam wheel, a series of lugs thereon positioned to actuate the feeder stopping means, a plurality of series of lugs thereon for actuating the cutter moving means, and means for shifting the cutter moving means so as to be acted upon by one or the other of said series of lugs, whereby the machine may be set to cut different lengths from the strip.

7. A machine for cutting a strip of material into sections or lengths including a cutter movable into and out of cutting position,

a chute through which the strip may be fed at a right angle to the cutter, said chute having the top thereof adapted to be opened to give access to the strip, and a pair of parallel notched feeder wheels projecting into said chute near each edge thereof for engaging the strip and feeding the same, and means for revolving said feeder wheels.

8. A machine for cutting a strip of material into sections or lengths including a cutter movable into and out of cutting position, a chute through which the strip may be fed to the cutter, a notch feeder wheel adapted to enter the chute and engage and feed the strip, a clutch for transmitting power to said feeder wheel, means for releasing said clutch, and a single means for actuating said clutch releasing means and moving said cutter into cutting position.

9. A machine for cutting a strip of material into sections or lengths including a rotatable cutter, means for revolving said cutter, means on which said cutter is mounted for moving the cutter into and out of cutting position, a foot for engaging the material and holding it while the cutter is cutting it, and means for holding and moving said foot that is connected with the means for mounting and moving the cutter, whereby the foot and the cutter move together simultaneously in the same direction.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

JOHN McINTOSH.

Witnesses:
G. H. BOINK,
O. M. MCLAUGHLIN.