July 3, 1934. H. N. SMITH 1,965,132

MACHINE FOR REELING FRICTION ELEMENTS

Filed Oct. 29, 1930 3 Sheets-Sheet 1

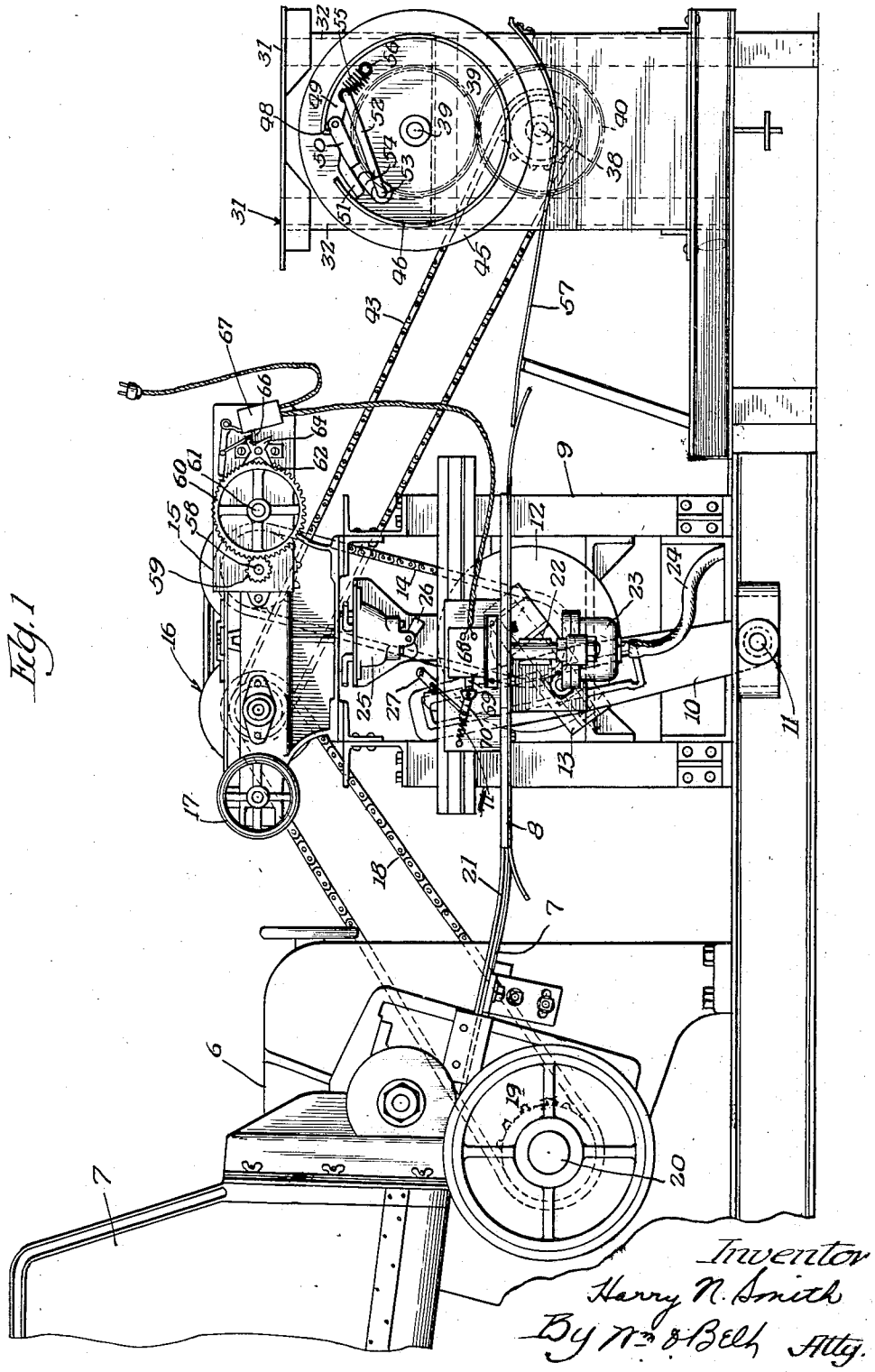


Fig. 1

Inventor
Harry N. Smith
By Wm. S. Belt Atty.

Published by AsbestosClaims.Law
asbestosclaims.law/library/22897/1

July 3, 1934. H. N. SMITH 1,965,132

MACHINE FOR REELING FRICTION ELEMENTS

Filed Oct. 29, 1930 3 Sheets-Sheet 2

Fig. 3

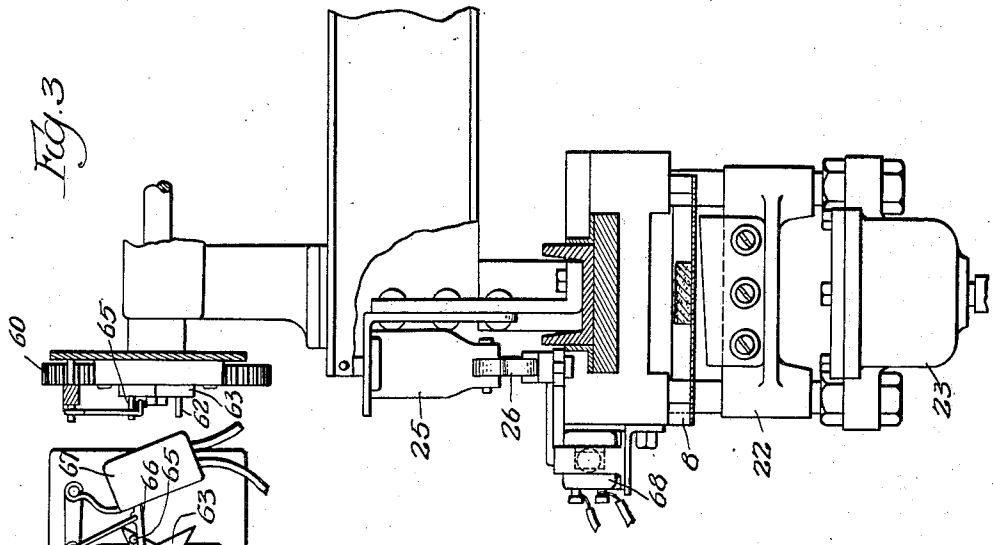
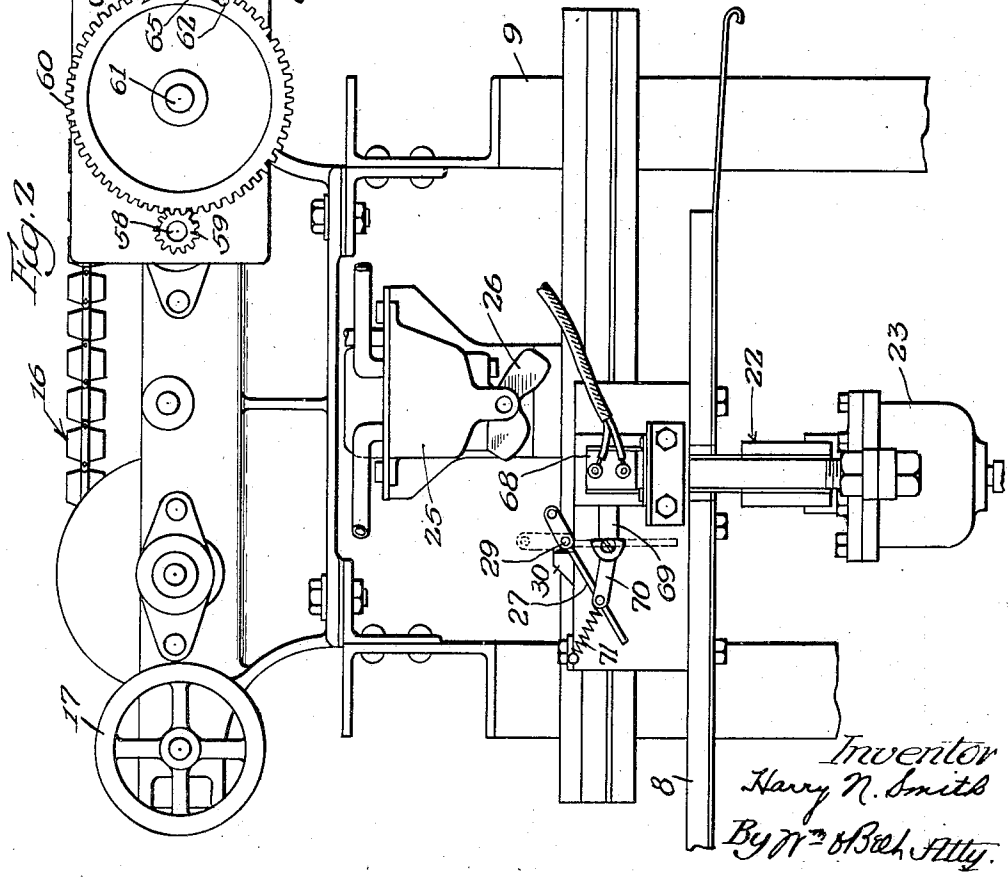


Fig. 2



Inventor
Harry N. Smith
By Wm. A. Bach, Atty.

Published by AsbestosClaims.Law
asbestosclaims.law/library/22897/2

July 3, 1934. H. N. SMITH 1,965,132

MACHINE FOR REELING FRICTION ELEMENTS

Filed Oct. 29, 1930 3 Sheets-Sheet 3

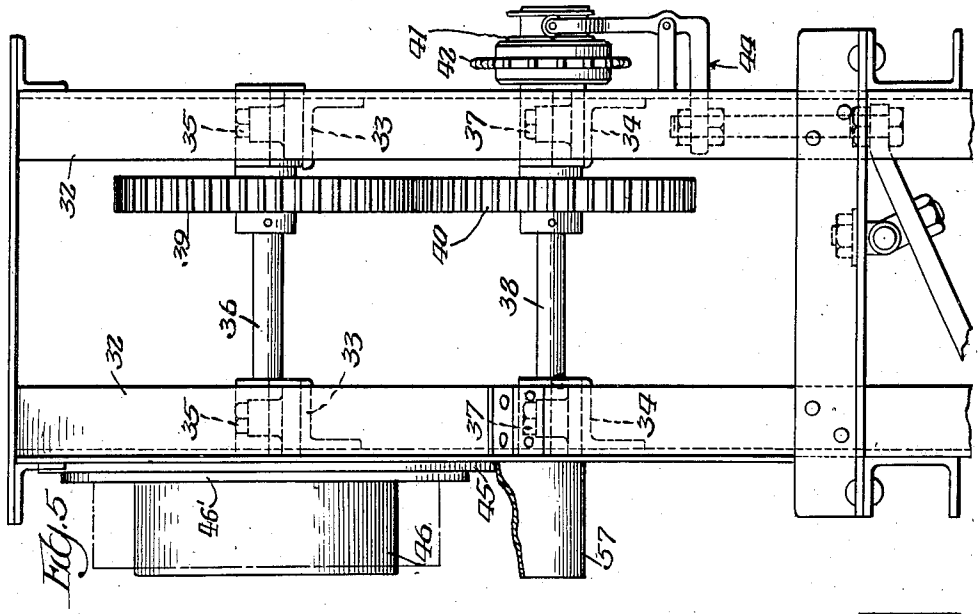


Fig. 5

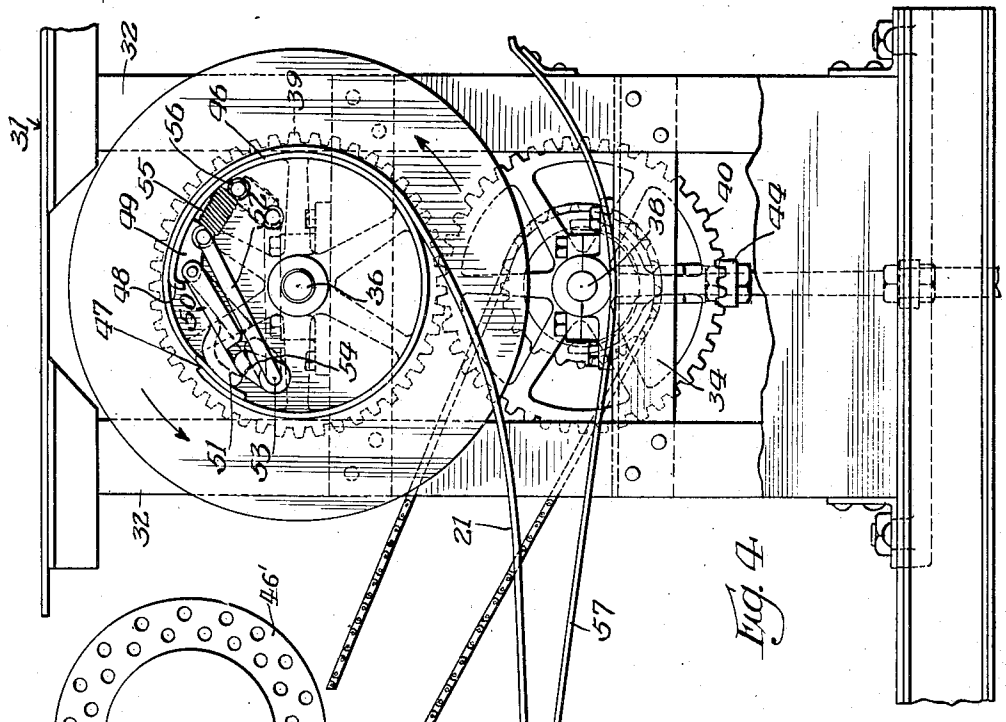


Fig. 4

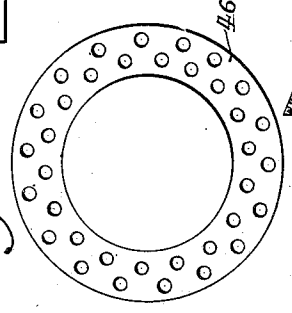


Fig. 6

Inventor
Harry N. Smith
By Wm. O. Bell Atty.

Published by AsbestosClaims.Law
asbestosclaims.law/library/22897/3

Patented July 3, 1934 1,965,132

UNITED STATES PATENT OFFICE

1,965,132

MACHINE FOR REELING FRICTION ELEMENTS

Harry N. Smith, Detroit, Mich., assignor to American Brakeblok Corporation, New York, N. Y., a corporation of New York

Application October 29, 1930, Serial No. 491,944

6 Claims. (Cl. 242—74)

This invention relates to reeling machines and more particularly to a reeling machine which may be used to reel or coil friction elements or the like.

The salient objects of the invention are to provide a reeling machine in which the article to be reeled may be quickly and easily connected or disconnected; in which a variable device is included which will compensate for an increase in the diameter of the reeled article; and in which the article is severed at predetermined times in order that predetermined lengths thereof may be reeled.

In the selected embodiment of the invention, illustrated in the accompanying drawings

Fig. 1 is a side elevational view of my improved reeling device in association with one type of article forming and cutting device;

Fig. 2 is an enlarged fragmentary elevational view of the cutting arrangement employed;

Fig. 3 is an end view of the apparatus illustrated in Fig. 2;

Fig. 4 is a side elevation of the reeling drum and associated parts;

Fig. 5 is an end elevation of the parts illustrated in Fig. 4; and

Fig. 6 is a plan view of an unloading and supporting member employed in the device.

In the accompanying drawings I have illustrated my invention as adapted for reeling friction elements of the kind employed in the brakes of automotive vehicles and the like, but it is to be understood that this is but an illustrative embodiment of my invention as it is susceptible to many other uses. The invention is shown in connection with an article forming machine, generally indicated by 6, of the kind described and claimed in my co-pending applications, Serial No. 402,100, filed October 24, 1929 now Patent No. 1,907,600, dated May 9, 1933, or Serial No. 491,375, filed October 27, 1930 now Patent No. 1,920,023, dated July 25, 1933. The material is delivered from the article forming machine 6 over the article delivery table 7 of said machine 6 and is directed, in the present instance, onto the carriage 8 of a cutting machine, generally indicated by 9, said cutting machine being, for example, of the kind disclosed in my co-pending application, Serial No. 399,530, filed October 14, 1929. The carriage 8 is operated by the rocker arm 10 which is pivotally mounted on the frame of the device, as indicated at 11, and this rocker is suitably connected to the driving disc 12 by the connecting means 13. The driving disc 12 is driven by a chain 14 which, in turn, is driven from the power delivery sprocket 15 of the speed varying device, generally indicated by 16, which includes a speed varying wheel 17. Power is supplied to the speed varying mechanism 16 through the chain 18 which is connected to the sprocket 19 on the main drive shaft 20 of the machine 6, said shaft 20 being driven from any suitable source of power. By reason of the fact that the cutting machine 9 and article forming machine 6 are driven from the same source of power, it is manifest that the operation of the two machines may be synchronized and therefore movement of the carriage may be brought about in timed relation with the delivery of the article, indicated by 21 and which is in strip form, from the machine 6, and thus a cutting device carried by the carriage may operate on the strip during movement thereof. When the device is operated in accordance with the disclosure in my co-pending application, Serial No. 399,530, filed October 14, 1929 now Patent No. 1,883,025, dated Oct. 18, 1932, the strip of material 21 is severed into predetermined lengths by the cutting device, generally indicated by 22, which in the present instance is pneumatically operated. Air is supplied to the operating cylinder 23 of the cutting device 22 through the hose 24, and air passage through the hose 24 is controlled by the valve 25. The valve 25 includes a trigger 26 operable by the finger 27 pivotally mounted on the carriage 8, as indicated at 29 (Fig. 2). When the device is operated to sever the strip 21 into predetermined lengths, the finger 27 is arranged in the dotted-line position of Fig. 2, and during movement of the carriage toward the right, as viewed in Fig. 2, said finger will be held against counter-clockwise movement by abutment thereof with the stop 30, and therefore when the finger 27 engages the trigger 26 the valve 25 will be operated to permit air passage to the cylinder 23 whereby the cutting mechanism will be operated. Immediately after operation of the cutting mechanism the carriage will move in the opposite direction but by reason of the fact that the finger 27 may freely pivot in a clockwise direction the trigger 26 will not be operated until the finger 27 again engages said trigger when the carriage 8 is moving toward the right in the next operation. The foregoing is the manner in which the device may be operated to sever the strip of material 21 into sections of a predetermined length, but this device is limited as to the length of strips which may be cut therein. Moreover, it is often desirable to furnish the strip material in coils of much greater length than the sections ordinarily cut in the foregoing

Published by AsbestosClaims.Law
asbestosclaims.law/library/22897/4

manner. For example, a strip twenty-five feet in length is often used, and such strips are utilized in the replacement of friction elements worn out in service, for it is manifestly much easier for a dealer to carry a length of the material and to cut from this length strips necessary to meet the requirements of the particular job at hand than to attempt to carry a large number of sections intended to meet all requirements. I have therefore provided an apparatus, which may be associated with the cutting machine previously described, to reel the strip of material into coils, and I have arranged the device so that these coils may all be made of a standard predetermined length. Such a reeling machine is generally indicated by 31 in the accompanying drawings and consists of a frame embodying upright standards 32 arranged in cooperating pairs on opposite sides of the machine. Between the upright standards on opposite sides of the machine supporting rails 33, 33 and 34, 34 are extended. On the supporting rails 33, 33 bearing structures 35, 35 are provided in which a shaft 36 is journaled. On the rails 34, 34 bearing structures 37, 37 are mounted in which a shaft 38 is journaled. The shafts 36 and 38 have spur gears 39 and 40 respectively mounted thereon which are meshed with each other, and in this manner the shafts 36 and 38 are interconnected for simultaneous rotation. On the shaft 38 a slip clutch of approved construction, generally indicated by 41, is mounted and this slip clutch includes a power receiving sprocket 42. A chain 43 interconnects the sprocket 42 with a sprocket on the shaft on which the sprocket engaged by the chain 18 in the power receiving device 16 is mounted, and it is therefore manifest that the reeling machine 31 is interconnected to the same source as that which operates the machines 6 and 9 and therefore the machine 31 may be operated in synchronism with said machines 6 and 9. A suitably operated mechanism, generally indicated by 44, is provided for controlling the engagement and disengagement of the clutch 41. Mounted on the shaft 36 outwardly of two of the upright standards 32 is a circular plate 45 and secured to this plate 45 is a circular band 46 which has a portion of the periphery thereof cut away to provide an opening, indicated by 47, one end of the band 46, at the opening 47, being bent downwardly to provide a shoulder 48. A block 49 is mounted on the inner periphery of the band 46 and is disposed in abutment with the shoulder 48. A lever 50 is pivotally mounted on the block 49 and carries a foot portion 51. A handle 52 is pivotally mounted on the plate 45 at 53 and formed as a unitary part of this handle 53 is an arm 54. A spring 55 is arranged between the free end of the handle 52 and a stud 56 on the plate 45. The spring 55 cooperates with the handle 52 to provide an over-center device. When the handle 52 is in the dotted-line position of Fig. 4, said handle may be moved upwardly and as soon as the handle is moved so that the end thereof is disposed above the stud 56, the spring 55 expands and urges said handle upwardly. Movement of the handle 52 in this direction urges the arm 54 into engagement with the foot portion 51, and the end of the strip 21 will have been previously arranged between the foot portion 51 and the inner periphery of the band 46 adjacent the opening 47, and therefore when the foot portion 51 is urged toward the band the end of the strip 21 is very effectively clamped. Thus, the end of the strip 21 may be directed from the forward end of the carriage 8 onto the guide strip 57 from whence it will be directed about the band 46 for winding thereon. In order to facilitate the removal of a strip wound on the band 46, I provide the perforated circular plate 46' which has a circular opening therein of a size equal to the periphery of the band 46, and thus the circular plate 46' may be passed over the band 46 and rested against the plate 45 as shown in Fig. 5. As soon as the strip 21 has been clamped in the above described manner the clutch 41 may be engaged and therefore the parts may be set in operation, the plate 45 and the band 46 being turned in a counter-clockwise direction, as viewed in Fig. 4. As the strip 21 is wound or reeled on the band 46, it is manifest that the diameter will increase and therefore the tendency will be to wind more material at each operation, which, in effect, is faster reeling. This, however, is prevented by arranging the clutch 41 to be a slip clutch and therefore the strip 21 may be reeled on the band 46 at a uniform rate of speed. It has been pointed out that it is desirable to wind but a predetermined length of the strip 21 on the band 46 in order that coils of predetermined length may be provided. I therefore provide a cutting means for severing the strip 21 at predetermined times and this cutting means includes the following mechanisms: On one of the shafts 58 of the speed varying mechanism 16 a pinion 59 is fixed which meshes with a spur gear 60 mounted on the shaft 61. On the spur gear 60 is a pin 62 which, during rotation of the gear 60, successively engages the arms of the star wheel 63 which is rotatably mounted at 64. On opposite arms of the star wheel 63 are pins 65, 65 which engage the operating lever 66 of the switch 67 mounted on the frame of the speed varying device 16. When the gear 60 rotates and the pin 62 moves one of the arms of the star wheel 63 so that one of the pins 65 will engage the switch operating lever 66, said lever is moved to close an electric circuit therethrough. A solenoid 68 is arranged in this electric circuit and when this circuit is closed this solenoid is energized to attract the armature 69 thereof. The finger 27 is connected to the solenoid 68 through a link 70 and when the armature 69 is attracted, as above set forth, the finger 27 is moved into the dotted-line position of Fig. 3 against the action of the spring 71. The finger is therefore disposed in a position in which it will engage the trigger 26 on the next reciprocation of the carriage 8 and therefore the cutting mechanism 22 will be operated in the manner previously described to sever the strip 21. By synchronizing the speed of the gear 60 with the movement of the strip 21, the length of strip severed in the above described manner may be accurately determined and therefore the length of strip in each of the coils mounted on the band 46 may be accurately determined. By omitting one of the pins 65 a strip of twice the length of the one described may be coiled on the band 46, and by providing additional pins on the arms of the star wheel 63 shorter lengths of strips may be so coiled. Since the pins 65, 65 are mounted on opposite arms of the star wheel 63, they are in diametrical opposition and hence the removal of one of the pins increases the length of the inoperative period of the cutting device by two, that is to say, in an even multiple of the period determined by the use of two pins. When additional pins are employed they are preferably so spaced from the illustrated positions of the pins 65, 65 that this multiple relationship is maintained. For example, the star wheel 63 has four equidistantly spaced arms and by providing a pin

Published by AsbestosClaims.Law
asbestosclaims.law/library/22897/5

on each arm the length of the inoperative period is halved. Thus, if the illustrated embodiment, that is, the use of two pins, so operates that a strip twenty-five feet in length is cut, the use of one pin will effect the severance of a strip fifty feet in length while the use of four pins will effect the severance of strips twelve and one-half feet in length. After the strip 21 has been severed and the end has been wound onto the band, the handle 52 may be manipulated to release the retained end of the strip, and the strip which has been coiled about the band 46 may be moved therefrom and the end adjacent the cut may be clamped in the previously described manner and the reeling operation continued. After the end of the strip has been disconnected, the circular plate 46' is gripped which facilitates removal of the strip from the band and which also provides a support for the strip in order that the same may be easily handled during transportation.

It is manifest from the foregoing description that I have provided a device wherein a strip may either be cut into relatively short lengths of a predetermined magnitude or wherein a strip may be reeled into a coil, which coil may be made of a predetermined length. It is also manifest that I have provided a device wherein, when it is used as a reeling device, a uniform speed of winding may be brought about in spite of the increase in diameter of the member on which the reeling is being carried out. When it is desired to use the device to cut predetermined lengths, the spring 71 is disconnected from the arm 27 and therefore said arm will operate in the manner previously described, it being understood that the circuit to the switch 67 is opened when the spring 71 is disconnected, for said spring normally acts on the finger 27 to hold said finger out of a position in which it may engage the trigger 26.

While I have illustrated and described a selected embodiment of my invention, it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the scope of the following claims.

I claim:

1. A reeling device including a flat circular plate, an outstanding band arranged on said plate in circular formation about the center thereof and having a portion cut away to provide an opening, clamping means for securing the end of a strip passed through said opening, said clamping means being arranged on said plate interiorly of the band and including a foot portion for engaging the strip to force the same into engagement with the inner surface of the band, and means for positively holding said foot portion in clamping or non-clamping position.

2. A reeling device including a reeling drum having a portion of the periphery thereof cut away, clamping means for securing the end of a strip passed through the cut away portion of said drum, said clamping means including a foot portion engaging the strip to force the same into engagement with the inner periphery of the drum, means for holding said foot portion in clamping position, said means including an over-center device whereby said clamping means may be positively held in either clamping or non-clamping position.

3. A reeling device including a flat circular plate, an outstanding band arranged on said plate in circular formation about the center thereof and having a portion cut away to provide an opening, clamping means on said plate arranged interiorly of said band, said clamping means including a foot portion, an over-center device for forcing said foot portion into clamping position, said over-center device being movable to release said foot portion whereby a strip wound on said band may be removed therefrom.

4. A reeling device including a flat circular plate, an outstanding band arranged on said plate in circular formation about the center thereof, means for attaching one end of a strip to be wound on said band to said band, a flat plate abutted against said first-named flat plate and having an opening therein surrounding said band whereby when the end of said strip is disconnected from said band said second-named plate may be moved over said band to remove the strip wound on the band and to support said strip after removal from said band.

5. In a reeling device, a rotatable disc, a drum projecting from one face of said disc and adapted to have a strip or the like wound thereabout, and a removable plate surrounding said drum and juxtaposed to said disc and adapted to be moved away from said disc and over said drum to remove a wound strip from said drum and provide a support for the wound strip after removal from said drum to facilitate handling of the wound strip.

6. In a reeling device, a vertically extending rotatable disc, a band having one edge thereof fast to one face of said disc inwardly of the periphery and equidistantly spaced from the center thereof to provide a drum on which a strip or the like may be wound, and a plate having an opening therein adapted to embrace said drum when said plate is mounted in juxtaposition to said disc, said plate being adapted to be moved away from said disc and over said drum to remove a wound strip from said drum and provide a support for the wound strip after removal from said drum to facilitate handling of the wound strip.

HARRY N. SMITH.