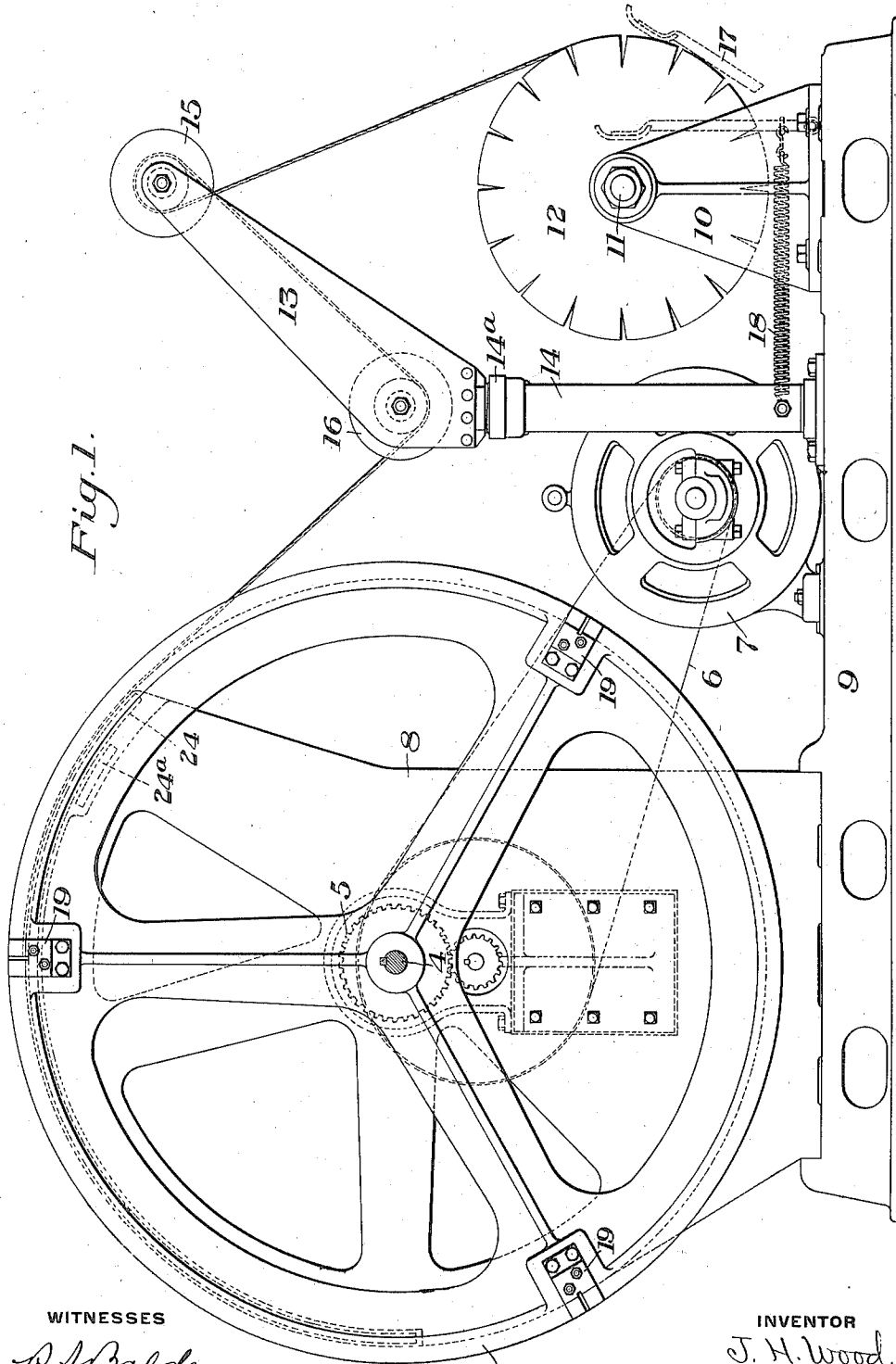


J. H. WOOD.
CUTTING APPARATUS.
APPLICATION FILED JUNE 5, 1909.

947,724.

Patented Jan. 25, 1910.

4 SHEETS—SHEET 1.



WITNESSES

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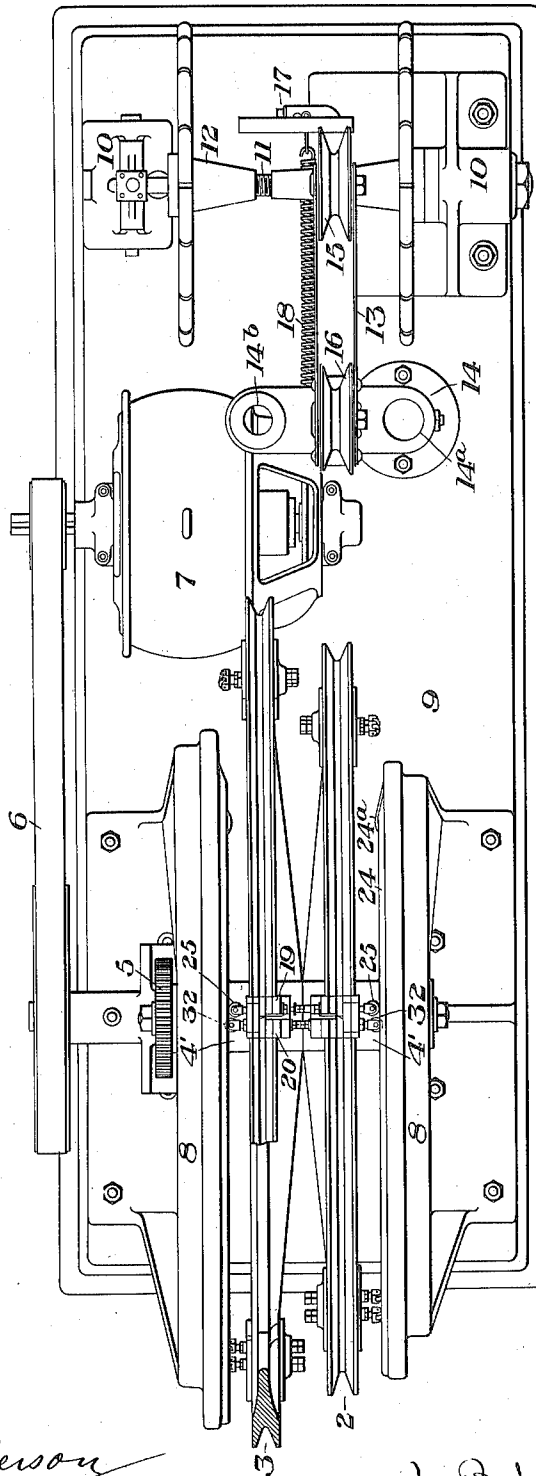
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

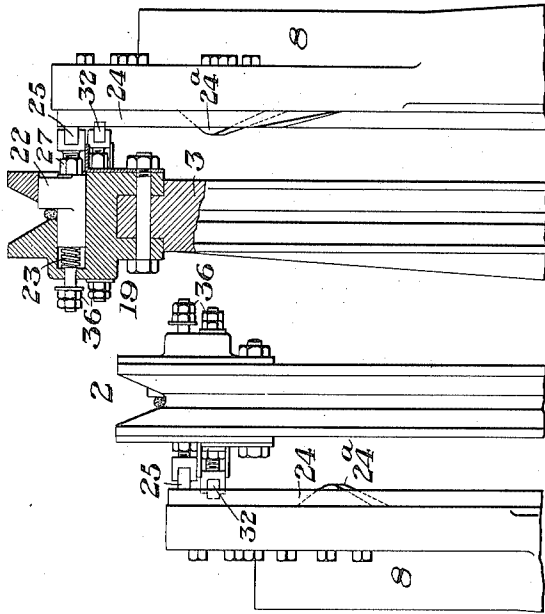


Fig. 4.

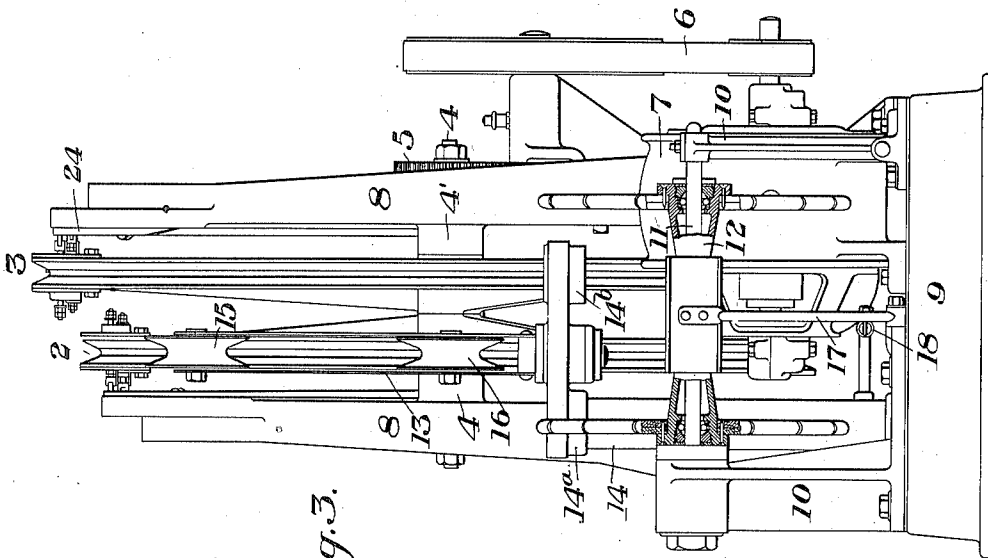


Fig. 3.

WITNESSES

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4 SHEETS—SHEET 4.

Fig. 8.

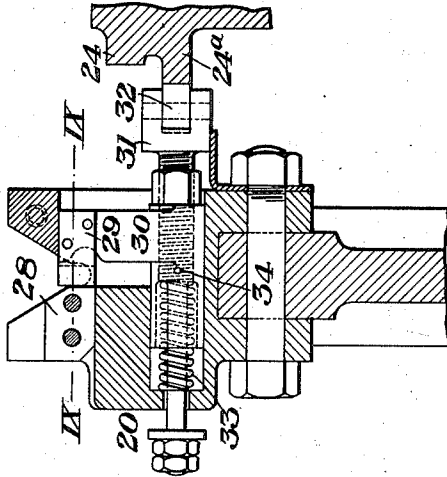


Fig. 7.

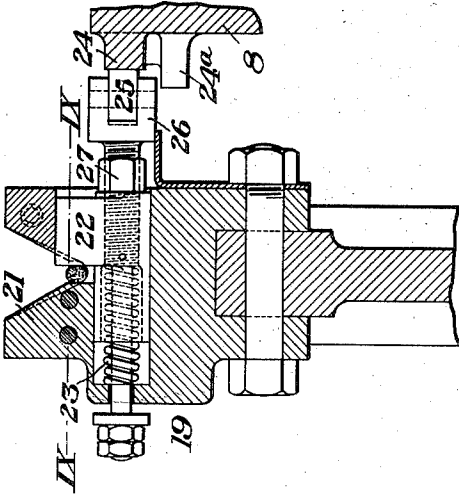
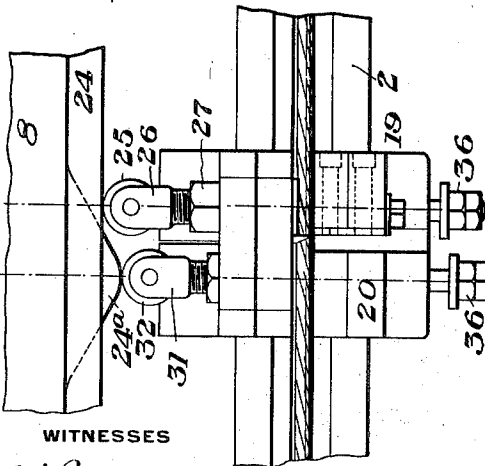


Fig. 5. VIII VII



R. H. Balderson
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Fig. 9.

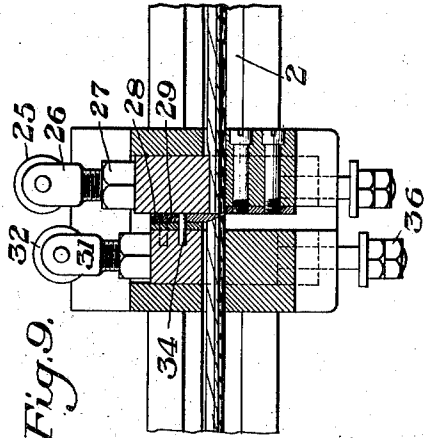
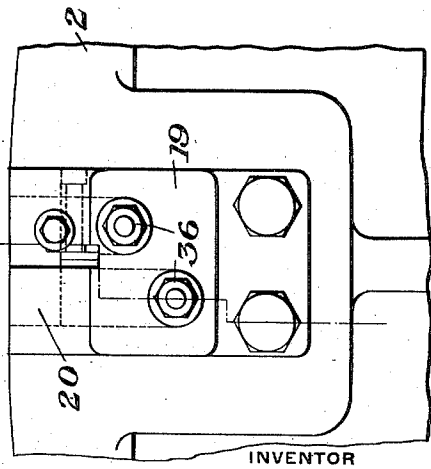


Fig. 6. VIII VII



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UNITED STATES PATENT OFFICE.

JOSEPH H. WOOD, OF ELYRIA, OHIO, ASSIGNOR TO NATIONAL TUBE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

CUTTING APPARATUS.

947,724.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed June 5, 1909. Serial No. 500,269.

To all whom it may concern:

Be it known that I, JOSEPH H. WOOD, of Elyria, in the county of Lorain and State of Ohio, have invented a new and useful Cutting Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal side elevation, partly in section, showing cutting apparatus constructed and arranged in accordance with my invention. Fig. 2 is a top plan of the same. Fig. 3 is an end elevation of the apparatus shown in Figs. 1 and 2. Fig. 4 is a detail elevation, partly in section, showing the gripping mechanism, and showing the cam surfaces as arranged in actuating the gripping and cutting mechanisms. Fig. 5 is a plan, and Fig. 6 a detail elevation showing the gripping and cutting mechanism as secured in the rim of the measuring wheels. Fig. 7 is a detail sectional end elevation on the line VII—VII of Fig. 5. Fig. 8 is a similar view on the line VIII—VIII of Fig. 5. Fig. 9 is a detail sectional plan on the line IX—IX of Figs. 7 and 8, showing the gripping mechanism and cutting mechanism as arranged during the cutting operation.

My invention relates to the cutting of long flexible materials, such as rope, into a large number of short pieces.

The apparatus is primarily designed for cutting pieces from a coil of rope, which are then used in tying pipe into bundles. Heretofore in cutting such ropes it has been the custom to take a coil of rope and to cut it transversely of its length along one side of its axis. This operation results in each layer of the coil varying in length from the other layers, and as a result some of the ropes are of the desired length, while others are either shorter or longer than necessary. This results in a waste which has been the cause of considerable expense in factories using a large amount of such materials for bundling.

The object of the invention is to provide apparatus constructed and arranged to mechanically grasp and hold the end of a coil of rope, or like material, to successively measure a piece of the desired length, to sever the measured piece from the coil, release the cut piece, and to grasp and hold the

cut end of the coil during and after each measuring and cutting operation.

Another object of my invention is to provide improved mechanism constructed and arranged to sever the material, and to cut the ends of the material square and clean.

A further object of the invention is to provide a clamping mechanism constructed and arranged to mechanically grasp and hold, and to then release the end of the coil of material at predetermined intervals.

A still further object of the invention is to provide cutting apparatus having improved means for yieldingly holding and controlling the movement of the coil of material while it is being unwound during the cutting operations.

In the drawings, 2 and 3 represent measuring wheels which are mounted on and are rotated with the shaft 4. This shaft is connected by means of slow down gearing and the belt 6 with the driving motor 7, and is mounted in bearings 4' on the standards or sides 8 of the apparatus, the standards and motor 7 being mounted on the bed plate 9 of the apparatus. Also mounted on the bed plate 9 in bearings 10 is a shaft 11, which is provided with an adjustable spool or drum 12 on which the coil of rope or other material to be cut, is mounted during the cutting operations. The measuring wheels 2 and 3, as shown, are of different diameters, to enable pieces of different lengths to be cut from the coil of rope on the drum or spool 12. The apparatus is also provided with a pivoted arm 13, mounted on the post 14, which is secured to the bed plate 9, and on the arm 13 are idler pulleys 15 and 16 which serve to guide the material during its passage from the drum 12 to one or the other of the measuring wheels 2 and 3. The arm 13, as shown, is mounted in the socket 14^a on the post 14, in position for guiding the material as it is uncoiled in its passage from the reel or spool 12 to the wheel 2. When the wheel 3 is to be used to measure and cut the materials, the arm 13 is placed in the socket 14^b provided on the arm 14 for that purpose.

Pivotally mounted on the bed plate 9 is an arm 17, having its upper end arranged to contact with the surface of a coil of material on the drum 12. The arm 17 is yieldingly held in contact with the coil on the drum

by means of the spring 18, which is connected to the arm 17 in such manner that when the arm is depressed into a horizontal position the spring will tend to hold it in such position until it is lifted by the operator into that shown in the drawings.

The periphery of the wheels 2 and 3 is provided, as shown, with three pockets, and removably mounted in each of the pockets is a gripping device 19 and cutting device 20. The gripping mechanism has opposing clamping faces 21 and 22, the jaw 22 being mounted so as to reciprocate in its seat and being yieldingly held in its open position by means of the helical spring 23. Each of the standards 8, on which the wheels 2 and 3 are rotatably mounted is provided with annular cam surfaces 24 and 24^a, and adjustably mounted on the sliding member 22 of the gripping device is an anti-friction roller 25 which is arranged to contact with and be moved by one of the cam surfaces 24 on the standards 8. The support 26 for the anti-friction roller 25 is adjustably secured to the removable clamping jaw 22, being held in its adjusted position by means of the jam nut 27. The cutting device comprises oppositely facing knives 28 and 29, the knife 29 being movably secured in its seat. The knife carrier 30 on which the knife 29 is mounted is adjustably secured to the support 31 on which an anti-friction roller 32 is secured. The roller 32 engages with one of the annular cam surfaces 24^a which are provided on the standards 8 of the apparatus. The knives 29 are yieldingly held out of their cutting position by means of the helical springs 33. The knives 29 are removably held in place on their supports, being provided with transversely extending openings or holes, through which the dowel pins 34 extend, and the movement of the knives 29 and the clamping jaws 22 is limited by means of adjusting nuts 36. The measuring wheels 2 and 3 are constructed so as to have a circumferential groove, similar to that formed in a rope pulley, in which the rope rests during the measuring and cutting operations. Three separate gripping and cutting mechanisms are shown on each wheel, although the number may be varied, or, the diameter of the wheels may be changed in order to cut pieces of greater or lesser lengths from a coil of the material being operated upon.

In the operation of my improved apparatus, a coil of rope or like flexible material is mounted on the spool 12, and one end is passed around the idler pulleys 15 and 16, and is secured between the clamping jaws of one of the clamping devices 19 on one of the other of the wheels 2 or 3. The motor is then caused to rotate which will in turn cause the wheels 2 and 3 to rotate. As the wheels are rotated in the direction of

the arrow on Fig. 1, the rope will be unwound from the spool 12, and when the wheels have rotated far enough to bring the next cutting mechanism into contact with the rope the cam surfaces 24 and 25 will cause the gripping mechanism to grip the rope behind the cutting mechanism, when the cutting knife will be actuated to sever a piece of the rope from the coil, which is then held by clamping devices at two points on the wheel. The cam surfaces are arranged to cause the gripping mechanism to retain its hold on the end of the coil of rope, after each cutting operation, until such time as the next cutting device on the periphery of the wheel is actuated by the cam surface to sever the rope.

As shown in the drawings, but one drum 12 is provided for the two measuring wheels 2 and 3, although two drums may be employed, in which case the wheels 2 and 3 can be operated simultaneously to cut the materials into pieces of different lengths, and while two measuring wheels are shown, obviously but one of such wheels may be used when desired.

The advantages of my invention will be apparent to those skilled in the art.

By the use of my improved apparatus, a coil of rope or similar flexible material is mechanically operated upon to successively cut it into a larger number of small pieces which are of the same length. There is no waste of the materials, and the operation is entirely automatic after the end of the coil rope has been placed in position in the first of the gripping mechanisms.

Modifications in the construction and arrangement of the parts may be made without departing from my invention.

I consider myself the first to construct apparatus which is adapted to mechanically cut a coil of rope or like materials into a large number of pieces of definite length, and to perform these operations successively upon different portions of a coil of rope without the attention of the operator, and I intend to claim such construction broadly.

I claim:

1. Apparatus for cutting coiled materials into pieces, comprising mechanism for unwinding the coil, and means for severing the pieces unwound from said coil, said unwinding mechanism having means arranged to grasp and hold the end of the coil during the cutting operation; substantially as described.

2. Apparatus for cutting coiled materials into pieces, comprising mechanism for unwinding the coil, and means for successively severing the pieces unwound from said coil, said unwinding mechanism having means arranged to grasp and retain its hold on the end of said coil after the cutting operation; substantially as described.

3. Apparatus for cutting coiled materials

into pieces, comprising mechanism for unwinding the coil, and means for severing the pieces unwound from said coil, the unwinding mechanism having means arranged to grasp and hold the coil on opposite sides of the cutting mechanism during the cutting operation; substantially as described.

4. Apparatus for cutting coiled flexible materials into pieces, comprising means arranged to grasp and measure definite lengths of the material from the coil, mechanism arranged to sever the measured pieces from the coil, and means adapted to grip and hold the end of said coil after each cutting operation; substantially as described.

5. Apparatus for cutting coiled flexible materials into pieces, comprising means arranged to grasp and unwind definite lengths of material from the coil, mechanism arranged to sever the pieces as unwound, and means adapted to grip and hold the end of said coil after each cutting operation, said gripping means being arranged to maintain its grasp while a subsequent length of material is being unwound and cut; substantially as described.

6. Apparatus for cutting flexible materials into pieces, comprising means arranged to successively grasp and measure definite lengths of material from the coil, mechanism arranged to mechanically sever the measured pieces unwound from the coil, and means adapted to grip and hold the end of said coil after the successive cutting operations; substantially as described.

7. A cutting apparatus comprising a spool on which a coil of materials to be cut is mounted, a measuring wheel having means

arranged to grasp and unwind definite lengths of the material from the coil, means arranged to sever the measured pieces from the coil, and mechanism arranged to grasp the end of the coil during each cutting operation; substantially as described.

8. In apparatus for cutting coiled materials into pieces, means for unwinding the coil, mechanism for severing the pieces unwound from said coil, a spool on which the coil is mounted, and means engaging with the coil for controlling its movement during the unwinding operation; substantially as described.

9. In apparatus for cutting coiled materials into pieces, a measuring wheel, means on the wheel arranged to grasp and unwind material from the coil, mechanism on the wheel adapted to sever pieces unwound from said coil when said wheel is rotated, and means engaging with said cutting mechanism arranged to mechanically operate the cutters and sever the measured length from said coil; substantially as described.

10. In apparatus for cutting coiled materials into pieces, having a measuring wheel, and having a spool on which the coil of materials is mounted, a pivoted arm having guiding pulleys thereon arranged to guide the materials unwound from said coil during the cutting operation; substantially as described.

In testimony whereof, I have hereunto set my hand.

JOSEPH H. WOOD.

Witnesses:

CHAS. FELL,
H. J. ELLEN.