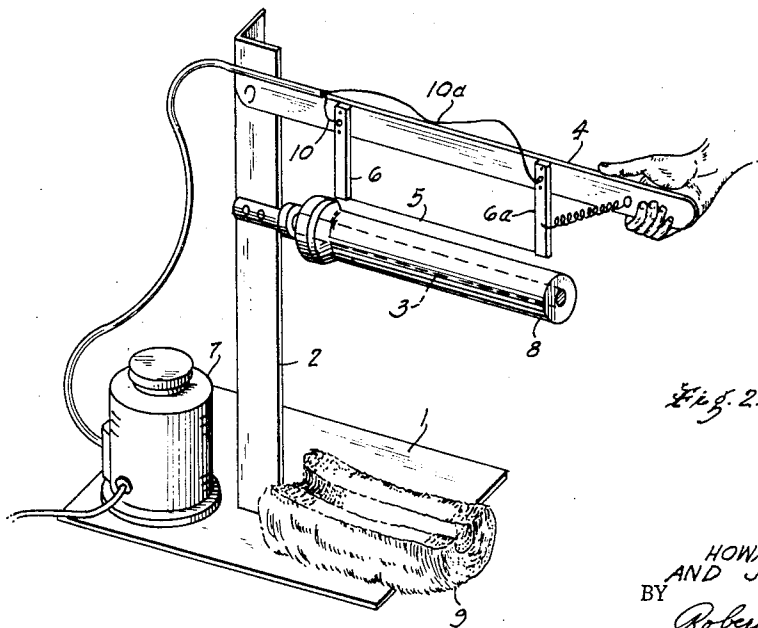
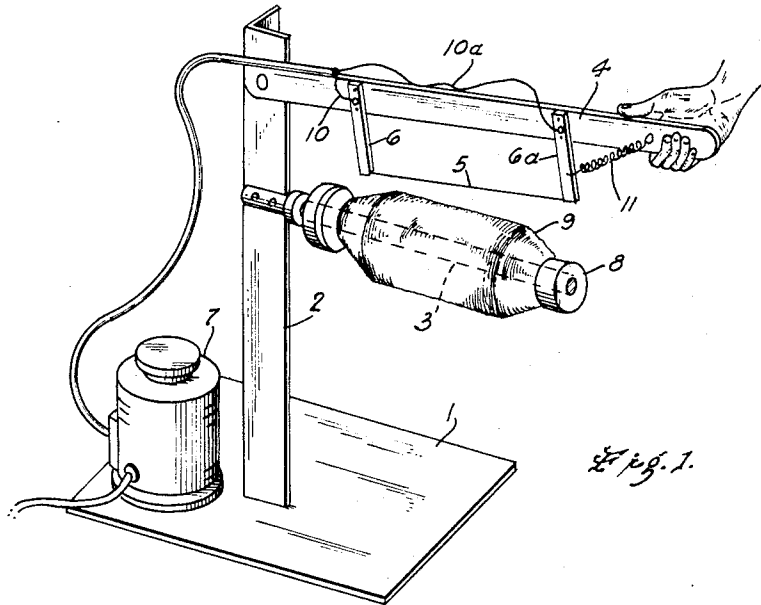


**Oct. 18, 1960**

H. BUNDEGAARD ET AL  
APPARATUS FOR REMOVING WASTE FILAMENTARY  
MATERIAL FROM A SPOOL OR BOBBIN  
Filed March 30, 1959

**2,957,065**



INVENTOR.  
HOWARD BUNDEGAARD  
AND JACK W. PREECE  
BY *Robert H. Mikaluk*  
ATTORNEY.

1

2,957,065

## APPARATUS FOR REMOVING WASTE FILAMENTARY MATERIAL FROM A SPOOL OR BOBBIN

Howard Bundegaard, Rowayton, and Jack W. Preece, Glenbrook, Conn., assignors to American Cyanamid Company, New York, N.Y., a corporation of Maine

Filed Mar. 30, 1959, Ser. No. 802,681

3 Claims. (Cl. 219—19)

This invention relates to removal of waste, filamentary material from a bobbin or a spool. More particularly, this invention relates to the removal of waste organic filamentary material with the use of a heated wire.

This invention is concerned with the old problem of removing the remaining waste organic (natural or synthetic) material from a bobbin or spool which usually remains on the bobbin or the spool in such a manner that it is difficult to remove. There have been various means and devices disclosed and invented in the prior art which solve or attempt to solve this problem, some of which are adaptable to specific types of filamentary material. These means include: unwinding the remaining material, manually stripping it from the spool or bobbin with a knife, employing a mechanical means to strip the remaining waste material with a knife, and the use of brushes which are adapted to the removal of material which is not permanently fixed to the spool or bobbin.

Because many of the means cause damage to the spool or bobbin, are very complex, or are hard to control mechanisms, there still exist many problems to be solved.

Applicants have found that by using a heated wire to cut the waste filamentary material that this cleans the spool or bobbin rapidly without damage to it.

Applicants' invention takes advantage of the thermoplastic properties of synthetic materials, such as those now in general use in making filaments, and therefore provides a much finer control than many previously known means. By merely adjusting the amount of current passing through the wire, it is not only possible to remove the waste material readily and without difficulty from the spool or bobbin, but it is also possible to remove undesirable intermediate portions by cutting the current off at the desired depth.

Other advantages are the facts that applicants' invention may be used on spools or bobbins of various diameters and that the temperature of the wire may be also hot enough to cut the waste filamentary material and cold enough so as not to damage the spool or bobbin.

The main object of this invention is to provide a means for removing waste, organic, filamentary material from spools and bobbins.

Another object is to provide a means which is susceptible to sufficient control so that undesirable intermediate portions of filamentary material which is wrapped about a bobbin may be severed and removed.

Another object is to provide a means of removing loose material from the spool or bobbin and keep it free from damage.

The invention comprises essentially a heated wire for cutting. This wire is fixedly suspended from an arm (these two elements forming a cutting assembly) which moves the wire in a cutting plane. The bobbin or spool which is desired to be connected is axially mounted in this cutting plane. This desired arrangement is conveniently accomplished by providing a base member with a vertical support attached thereto wherein the heated wire cutting assembly is rotatably mounted to the vertical support at

2

one end of the arm. The means for mounting the bobbin is an elongated bobbin holder which is mounted in such a position that the heated element may be brought into contiguous contact with the bobbin by moving the heated wire assembly through the cutting plane. Since the filamentary material is always under tension, the convolutions of material part as they are cut and fall from the spool or bobbin. In order to heat the wire, a variable voltage source is electrically connected to the said wire.

The apparatus of the present invention will be more clearly understood with reference to the accompanying drawings.

Figure 1 is a perspective view of the apparatus having a waste filamentary material containing bobbin mounted thereon.

Figure 2 is another perspective view of the same apparatus showing waste filamentary material after it has been cut by the heated wire and removed from the bobbin.

Referring particularly to Figures 1 and 2, the base member 1 has a vertical support 2 to which is attached a bobbin holder 3 and a movable arm 4 having attached thereto a cutting wire 5 which is supported by electrically conducting supports 6 and 6a. The voltage regulator 7 is provided to adjust the temperature of cutting wire 5. Voltage regulator 7 is electrically connected to supports 6 and 6a by way of the electrically conducting leads 10 and 10a. The waste filamentary material 9 is shown to be wrapped around bobbin 8 in Figure 1. In Figure 2 waste filamentary material 9 is shown after it has been completely severed by the heated wire element 5 and has completely fallen from bobbin 8. Spring 11 is used to keep the wire element taut but is only to be considered an optional feature.

The operation of the apparatus shown in Figures 1 and 2 of the drawing is as follows: a bobbin 8 containing waste, organic, filamentary material 9 is mounted on bobbin holder 3. Voltage regulator 7 is adjusted to provide heated wire 5 with sufficient current so that it will be at the correct temperature to sever the convolutions of the waste filamentary material which is being removed. The cutting wire assembly is then moved to engage the heated wire with the waste filamentary material and sufficient pressure is applied until the convolutions of the waste filamentary material have been completely severed.

Any well-known electrically resistant wire may be used for the cutting wire such as Inconel, Nichrome or even platinum. The source of the current is controlled by a variable transformer, if A.C. is used, and a rheostat if D.C. is used. Supports 6 and 6a may be conductive or non-conductive. However, if they are non-conductive, electrical contact from the current source must be made directly to the current source leads.

The various organic filamentary materials, including synthetic polymeric filaments or fibers such as nylon, Dacron (a polyester fiber), the various commercially available polyacrylonitrile filamentary materials, as well as many of the natural filamentary materials, can be severed and removed from bobbins or spools by means of the apparatus and using the process of this invention.

We claim:

1. An apparatus for removing waste, organic, filamentary material from a bobbin comprising a base member having an elongated support; an arm rotatably attached at one end to said support; two longitudinally spaced supporting means extending in the same direction from said arm; an electrical resistance wire suspended across the terminal ends of the said supporting means, the arm, the supporting means and the resistance wire all being included in the plane defined by the path of rotation of said arm; an elongated bobbin holder extending from a fixed attachment to said support along a line which

is substantially coextensive with one of the lines defined by said wire in the path of rotation; and a bobbin supported on said bobbin holder; the rotation of the aforesaid arm moving the resistance wire through the defined plane into contiguous contact with the surface of said bobbin.

2. An apparatus as claimed in claim 1 wherein the electrical resistance wire is electrically connected to a source of electricity.

3. An apparatus for removing organic, filamentary material from a bobbin comprising a base member having an elongated support; an arm rotatably attached at one end to said support; two longitudinally spaced supporting means extending in the same direction from said arm; an electrical resistance wire suspended across the terminal ends of the said supporting means, the arm, the supporting means and the resistance wire all being included in the plane defined by the path of rotation of said arm; an elongated bobbin holder extending from a fixed attachment to said support along a line which is substantially coextensive with one of the lines defined by said wire in the path of rotation, the rotation of the aforesaid arm

during operation of the apparatus causing the resistance wire to move through the defined plane into contiguous contact with the surface of a bobbin that, during operation of the apparatus, is positioned on the aforesaid bobbin holder.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

771,518	Wilson	Oct. 4, 1904
1,679,004	Pinkel et al.	July 31, 1928
1,905,366	Carlin	Apr. 25, 1933
2,237,203	Swanson	Apr. 1, 1941
2,419,184	Young	Apr. 15, 1947
2,422,772	Bohn	June 24, 1947
2,438,156	Dodge	Mar. 23, 1948
2,692,328	Jaye	Oct. 19, 1954
2,747,272	Smith et al.	May 29, 1956
2,930,878	Camerini	Mar. 29, 1960

##### FOREIGN PATENTS

383,707	Germany	Oct. 19, 1923
---------	---------	---------------