Oct. 4, 1932. E. L. GRIFFITH 1,881,183

WINDING MACHINE

Filed Oct. 16, 1931 4 Sheets-Sheet 1

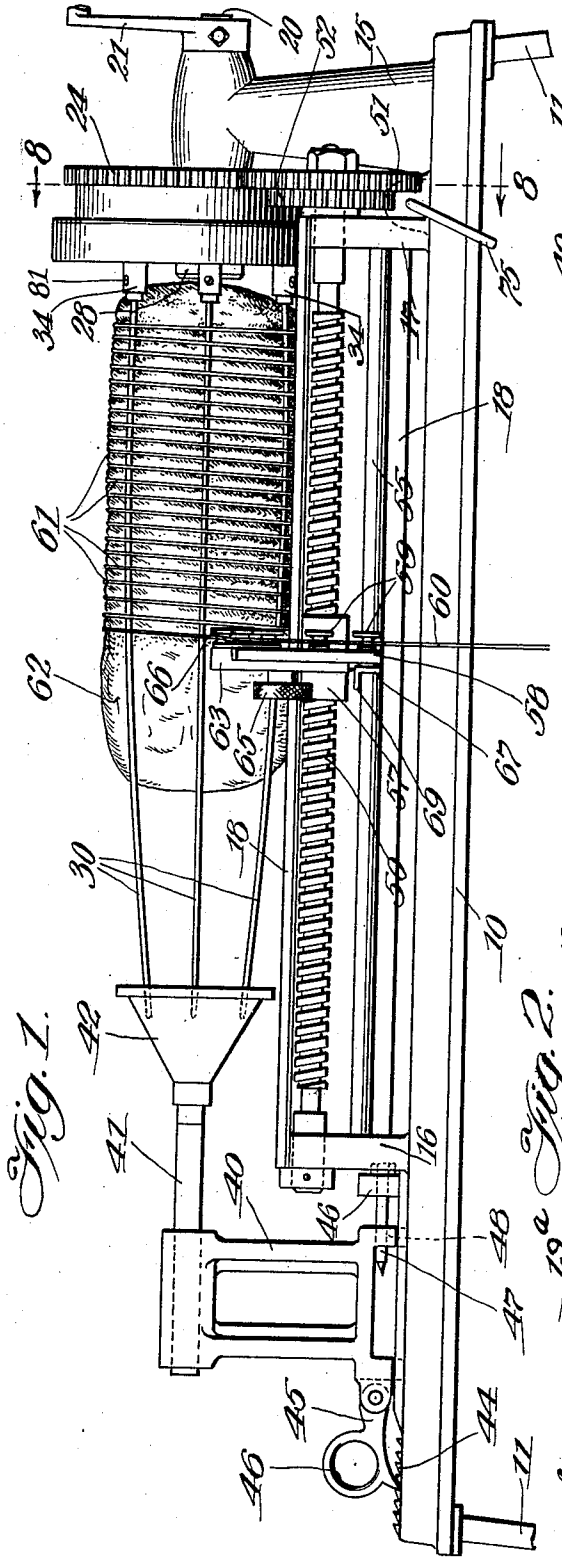


Fig. 1.

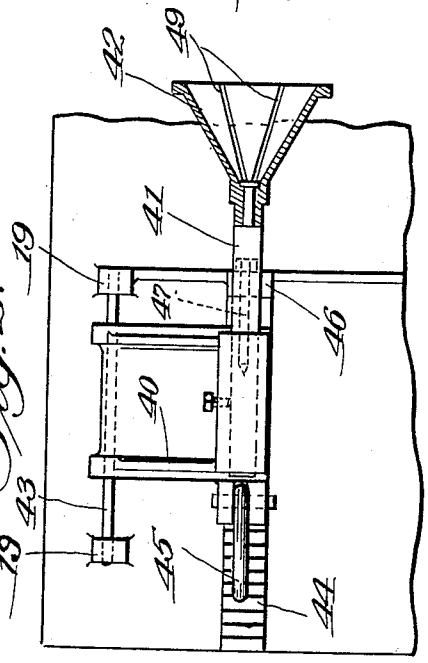


Fig. 2.

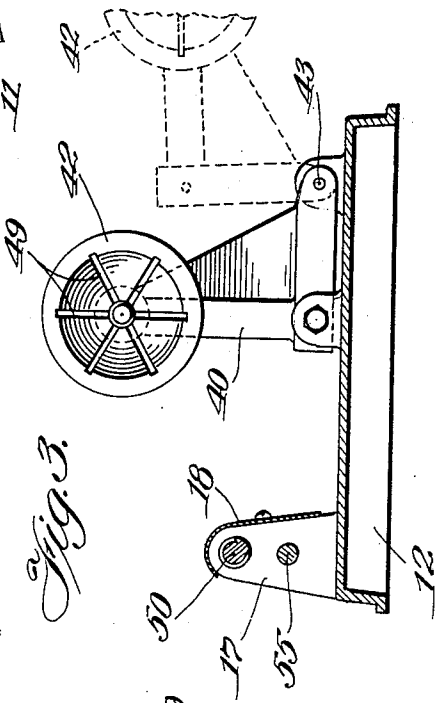


Fig. 3.

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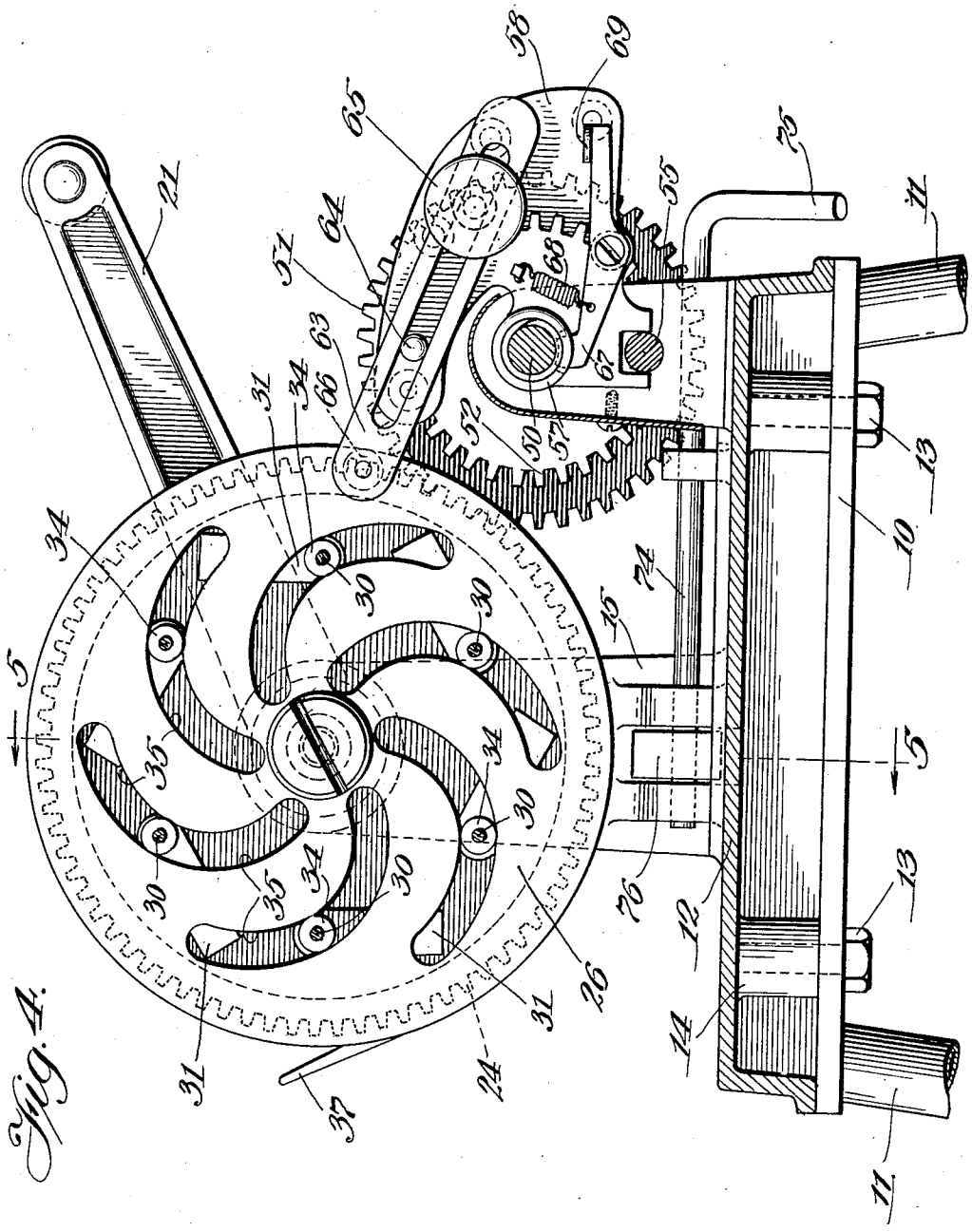


Fig. 4.

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WINDING MACHINE

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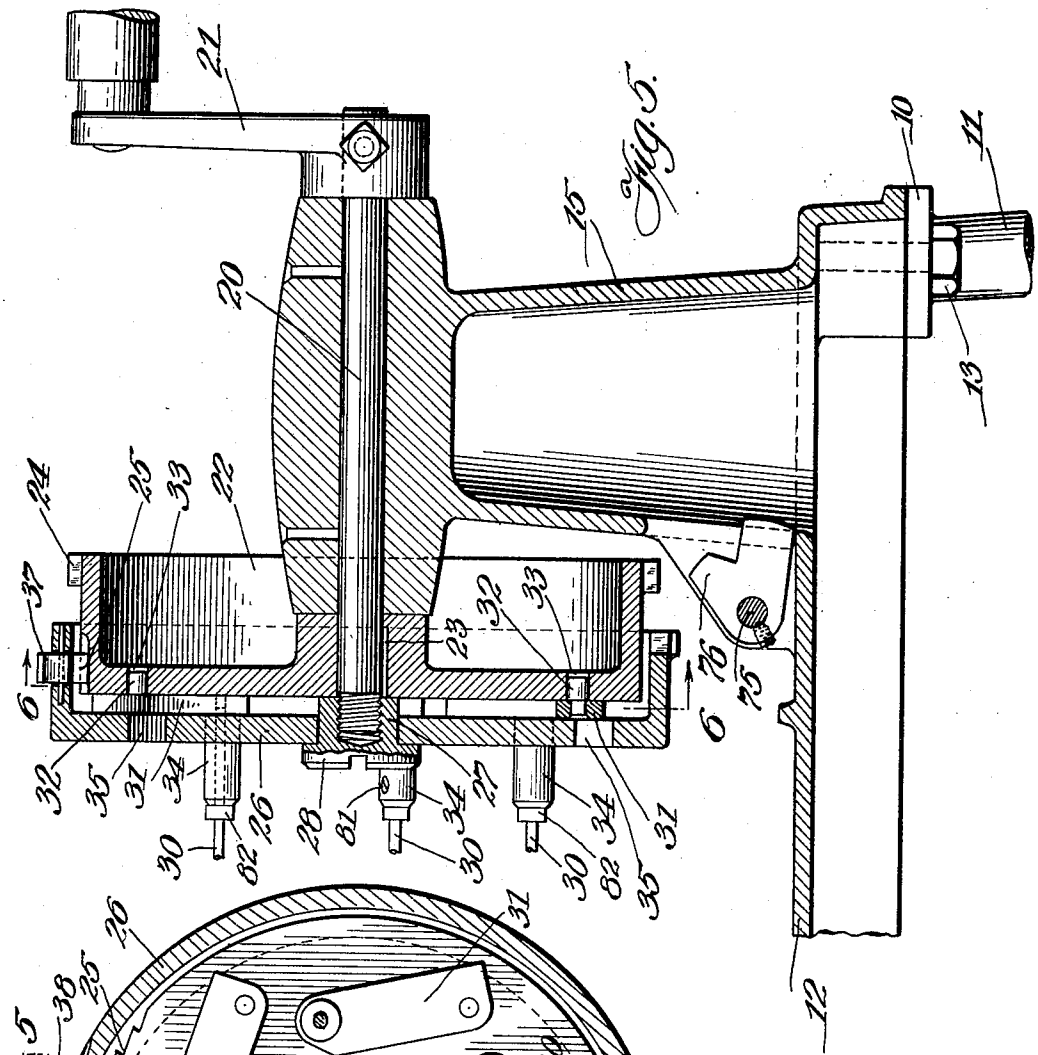


Fig. 5.

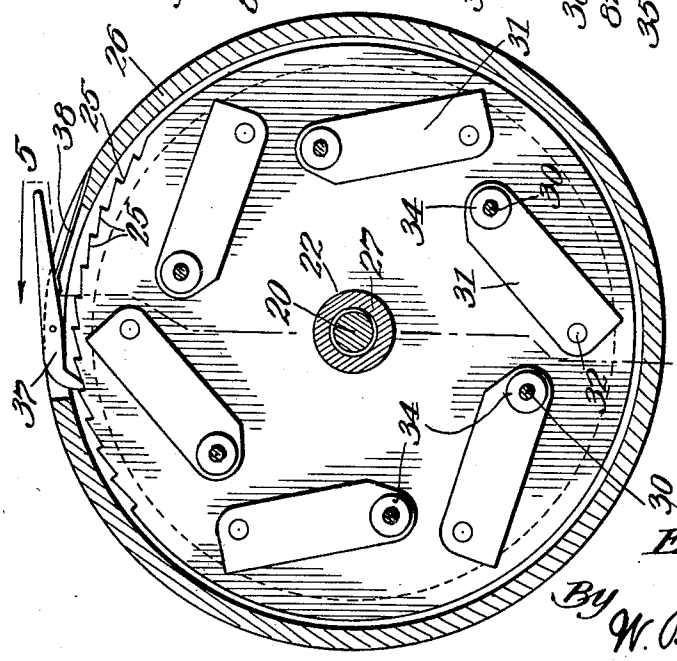


Fig. 6.

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WINDING MACHINE

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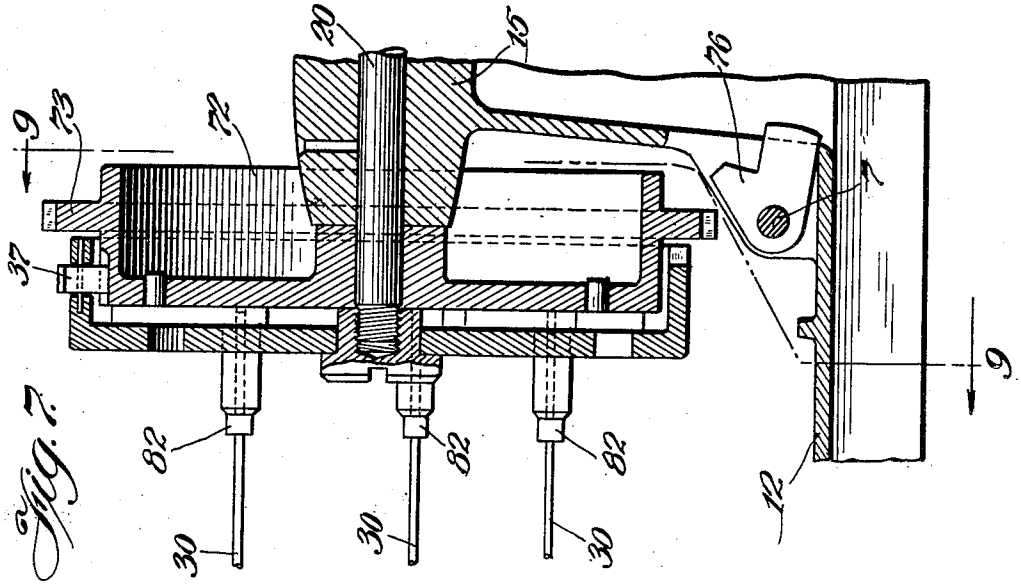


Fig. 7.

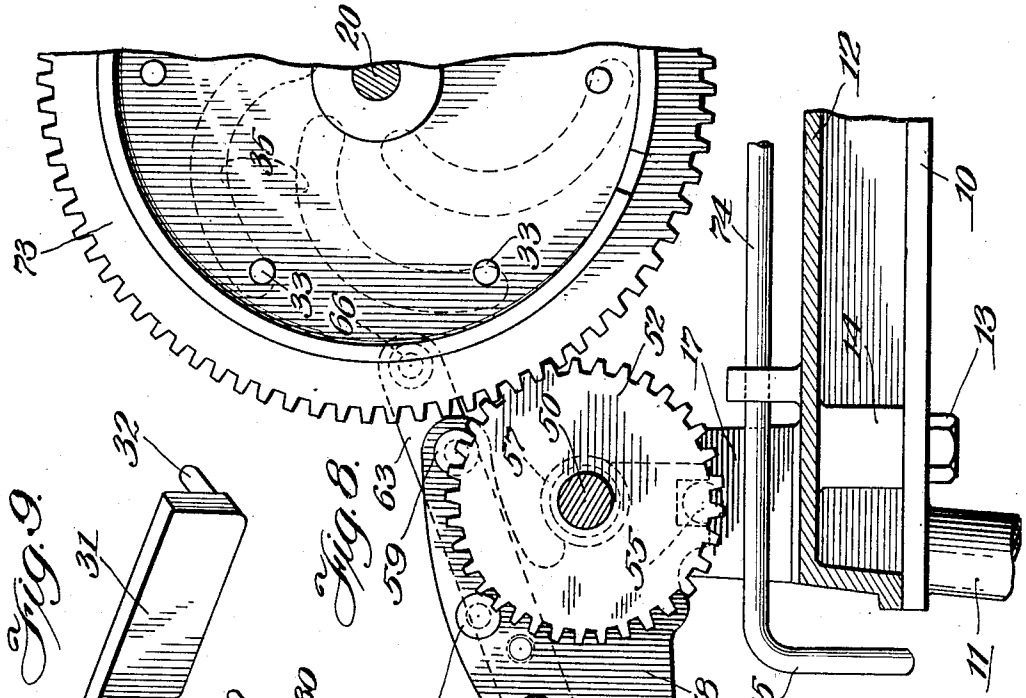


Fig. 8.

Fig. 9.

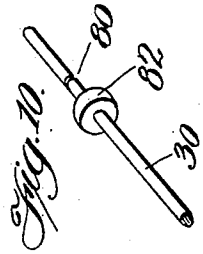


Fig. 10.

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Patented Oct. 4, 1932 1,881,183

UNITED STATES PATENT OFFICE

ENOCH L. GRIFFITH, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GRIFFITH LABORATORIES, INC., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

WINDING MACHINE

Application filed October 16, 1931. Serial No. 569,247.

The present invention relates to winders for articles like sausage, hams, etc.

Meats in particular are provided on the market in wound form. One object in winding the meats is to elongate them and to squeeze them into a round form. For other reasons, different kinds of meat and other products may be wound.

One object of the present invention is the provision of a machine for winding articles quickly, uniformly and tightly.

A particular object is the provision of an automatically adjustable holder for different sized articles.

Still another object is the provision of means which facilitates removal of the wound article from the machine.

Another object is the provision of a spacing device for spikes which are present in the holder.

Still another object is the provision of a machine with a changeable part for varying the spacing of the winding cord.

A particular object of the invention is the provision of a holder having all the spikes removable.

Various other and ancillary objects and advantages of the invention will be apparent from the following description and explanation of the machine which is shown in the drawings as an exemplary embodiment of the invention.

Fig. 1 illustrates a front elevation of the machine.

Fig. 2 is a plan view of the tail-stock end of the machine.

Fig. 3 is an end view of the tail stock looking from the right in Figs. 1 and 2.

Fig. 4 is an end view of the head stock of the machine looking from the left in Fig. 1.

Fig. 5 is a vertical cross-section of the head stock taken on line 5—5 of Fig. 4, and line 5—5 of Fig. 6.

Fig. 6 is a cross-section of the head stock on line 6—6 of Fig. 5 illustrating a ratchet mechanism therein.

Fig. 7 is a cross-section, like Fig. 5, showing a second drum in the head stock which may be used to change the gearing ratio to vary the spacing of the winding.

Fig. 8 is a vertical cross-section of the machine having the head stock of Fig. 7, and showing that portion of the winding spindle mechanism which lies to the left of line 8—8 in Fig. 1.

Fig. 9 is a detailed perspective view of one of the spike carriers of the holding device.

Fig. 10 is a perspective view of a removable spike in the holder.

The general arrangement of the machine is such that a rotatable head stock presents a concentric and cylindrical cage of spikes having one free end each and a mounted end. A ham, for example, may be placed in the cylindrical cage from the free-ends of the spikes. A movable tail stock can be swung into axial alinement with the holder containing the ham and can be moved toward the holder to receive the free ends of the spikes, thus holding and guiding them. A lead screw carries a guide for winding cord and feeds cord along the held ham. The device in the head stock is so arranged that when turning is commenced, the holder automatically tightens and squeezes the ham.

The various functions of the essential parts generally referred to above may be effected by numerous constructions. In the device of the drawings there is shown by way of illustration one mechanism for performing the various functions. Certain detailed devices with special functions are also employed. It is to be understood that the invention is not to be considered as limited to the specific devices herein disclosed and described, but it is to be considered as more comprehensive in scope and to include modifications and changes falling within the scope of the appended claims.

I prefer to mount the machine on a table 10 rigidly supported by legs 11. The machine has a base 12 secured by bolts 13 entering lugs 14 in the dished underside of the base. On the base (Fig. 1) at the right, there is a fixed upright support 15 for the head stock; at the front, two fixed upright brackets 16 and 17 and a covering connecting hood or shield 18 for the cord feeder and carrier; and at the rear left, two lugs 19 and 19*a* for mounting the tail stock.

The head stock is carried by an axle 20 bearing in upright 15. Any power means, such as a hand crank 21 turns the machine. On the inner end of the axle 20 there is a drum 22 keyed at 23 to the axle. A gear 24 is formed by teeth on the drum for operation of the cord feeder. Ratchet teeth are also formed at 25 on a section of the drum. In actual use, the power is transmitted to the article being wound through the pressure exerted by the holder on the article. The ratchet teeth 25 are related to the construction which accomplishes this.

A second drum 26 nests over the first drum 22 and is in itself freely rotatable independently of the drum. It is free to turn on a periphery of a cap 27 threaded onto the end of spindle 20. The cap also serves to hold drum 22 in place by being screwed against the drum 22, and a head 28 on the cap holds drum 26 in place.

The holder comprises a series of spikes 30 mounted in carriers 31 housed between the two drums 22 and 26. Six spikes are illustrated but more or less might be used. Each carrier has a flat body portion at one end of which there is a pivoted mounting lug 32 which enters one hole of a series of six circumferentially arranged holes 33 in the driving drum 22. Each carrier has at the other end, and at the other side, a spike holding lug 34 which projects through and rides in one of a series of six curved slots 35 in the face of drum 26. An opening 36 in the drum rim carries a pivotal pawl 37, pressed by spring 38, into engagement with the ratchet teeth 25. The movement of lugs 34 in their slots permits sufficient relative turning of the two drums so that pawl 36 may traverse the teeth 25.

In use the relative turning of the two drums varies the diameter of the cylinder defined by the six spikes 30. When a ham or other article is placed within the spikes, and the drum 22 is turned while drum 26 is held motionless, or is permitted to drag, the pawl 37 rides over the teeth until all the spikes so tightly engage the article that further relative motion of the drums is difficult. The pawl 37 prevents the held article from becoming loosened until the pawl is released by the operator.

The free ends of the spikes 30 are centered by the tail stock. I use a part which rotates with the holder. The tail stock has a swinging slidable frame 40 containing an axially adjustable projecting rod 41 alined in use with the main axle of the head stock. A funnel-shaped receiver 42 is mounted to rotate on the end of said rod 41 to receive the free ends of spikes 30. The frame is pivotally mounted on a long pin 43 mounted in lugs 18 and 19 on the base, and the frame may slide longitudinally on the pin 43 for adjustment of the tail stock 40 along the main axis of the machine. A toothed rack 44 on the base receives the pawl 45 pivoted at 46 on the frame 40. Ring 46 on the pawl is provided for the operator's finger to lift the pawl so the tail stock may be moved away from engaging position with the spikes 30. A lug 46 on the base carries a fixed pointed pin 47 which enters a registering hole 48 in the frame 40 for centering the frame against motion resulting from looseness on the pin 43.

A conical or other tapered surface may be provided within the receiver 42, but there is a tendency for the ends of spikes 30 to slide about as they frictionally engage the surface to cause its rotation. The spikes may therefore become differently spaced and cause a distorted shape at the tail stock end of the held article. To prevent this I provide grooves 49 in the surface, one for each spike. Thus the receiver 42 is positively turned by the spikes, and not frictionally, and all the spikes are equally spaced.

The cord feeder comprises a lead screw 50 mounted in the brackets 16 and 17 under the shield 18. Two gears 51 and 52 of different size are mounted on the end. The large gear 51 meshes with gear 24 on the drum of Fig. 5. The smaller gear 52 meshes with a larger gear on another drum, such as that shown in Fig. 7. A guide bar 55 is fixed in the brackets 16 and 17 parallel to the lead screw for cooperation with a movable cord carrier.

The cord carrier (Fig. 4) comprises body 57 through which the lead screw passes freely, and a recessed bracket plate 58, which receives guide bar 55. The plate projects forwardly, upwardly, and then rearwardly to avoid the shield 18. Grooved buttons 59 on the plate receive and carry cord 60, which is shown wound at 61 on an article 62 in the holder. An adjustably mounted slotted arm 63, riding on pin 64 and clamping screw 65, is movable toward the axis, to carry a guiding button 66 nearer to the article being held. Pivoted on plate 58 is a lever 67 urged by spring 68 into engagement with the threads of the lead screw. The lever 67 extends forwardly of the machine and is provided with an angular projection 69 which the operator may raise to disengage the feeder from the lead screw.

In Fig. 7 a modified drum is shown. It may differ in design for different sized articles. The essential difference in the two drums illustrated, that is drum 22 in Fig. 5 and drum 72 in Fig. 7, is the size and position of gear 73. The gear 73 is larger than gear 24, and is positioned differently so that gear 72 meshes with gear 52 of the feeding device. Thus a wider spacing may be effected in winding by using the drum of Fig. 7.

Various means may be provided for locking the machine against rotation when it

may be desired, as in inserting and removing articles. I illustrate a lock in the form of a spindle 74 with handle 75 so that the spindle may be turned to bring a key 76 into locking position between the teeth of either gear 24 or gear 73.

In use, it will be obvious that the spikes 30 and the article therein, are tightly wound. It is necessary to withdraw the article from the holder, causing the spikes to slide between the windings and the article. Much difficulty is experienced, especially with long small articles, like summer sausage. A great deal of force is required to draw the article off the holder, and much time is wasted. To avoid this I make some, but preferably all, of the spikes 30 removable from spike carrier lugs 34. In practice I find that three fixed spikes and three removable spikes permit easy and convenient removal of an article. However, in order to make the machine more adaptable, I prefer to provide all the spikes as removable spikes, and to provide means for rendering them fixed as desired. I may do this by inserting the spike removably into a socket in lug 34 (Figs. 9 and 10). A groove 80 in the spike receives the end of a set screw 81 in socket 34 to lock the spike in the socket. When the screw is loose, the spike is a removable one. In addition I provide a collar 82 on the spike. This may be used conveniently over a shoulder to aid in drawing a removable spike from a wound article.

By having all the spikes removable, and by providing a large supply of spikes, the capacity of the machine may be greatly increased. With fixed spikes considerable time is wasted in removing a wound article from the spikes. It must be moved over the length of the spikes and this motion is not quickly accomplished. With removable spikes, the wound article and the spikes need be moved only a relatively short distance. A second workman may remove the spikes, and as spikes are placed into the machine for a new piece, they may be selected and positioned according to the piece to be wound. By removing one or more spikes with the article, the effort in removal is lessened, and there is a lessened tendency for spikes to move the windings. The particular method of operation may be adapted to the character of article, and the character of winding.

I claim:

1. A winder for articles such as hams and sausage, comprising in combination, a base plate, a head stock therein, a removable tail stock on said base, a rotatable holder consisting of free ended spikes mounted at the other ends as elements of a cylinder in the head stock, means to adjust the diameter of the cylinder of spikes, and a cord feeding device operatively associated with the holder for spiraly winding the holder, said tail stock including spaced means to engage the free ends of the spikes individualy in a fixed spaced relation for rotation therewith.

2. In a winder of the class described means for holding an article to be wound comprising in combination, a rotatable head having a radially movable series of circumferentially disposed spike carriers, elongated spikes mounted in said carriers as elements of a cylinder, and a concentrically mounted revoluble funnel-shaped receiver for the free ends of said spikes, said receiver being grooved to receive each spike.

3. In a winder of the class described means for holding an article to be wound comprising in combination, a rotatable head having a radially movable series of circumferentially disposed spike carriers, elongated spikes, means for removably mounting said spikes in said carriers as elements of a cylinder, whereby one or more spikes may be removed with the wound article, and a concentrically mounted revoluble funnel-shaped receiver for the free ends of said spikes.

4. In a holder of a winder of the class described, in combination, a spike carrier having receiving means adapted to receive a spike axially, a spike having an end adapted to be removably mounted in said means axially of the spike, and means for positively holding said spike in said carrier against removal.

5. A holder for a winder of the class described comprising in combination, a series of spikes arranged as elements of a cylinder, and a carrier for said spikes having means cooperating with the end of each spike to mount it in position, at least one spike being removable from said carrier.

6. A holder for a winder of the class described comprising in combination, a series of spikes arranged as elements of a cylinder, a carrier having means for mounting each of said spikes for removal of each spike, and means for locking at least one of said spikes into the carrier against removal.

7. In a winder of the class described having a series of holding spikes, a tail stock having a funnel-shaped receiver for ends of said spikes, said receiver having internally thereof a series of equally spaced grooves for receiving the ends of said spikes.

In testimony whereof I have hereunto affixed my signature.

ENOCH L. GRIFFITH.