G. A. SCHICK.

THREAD MEASURING DEVICE.

APPLICATION FILED SEPT. 27, 1917.

1,329,933.

Patented Feb. 3, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

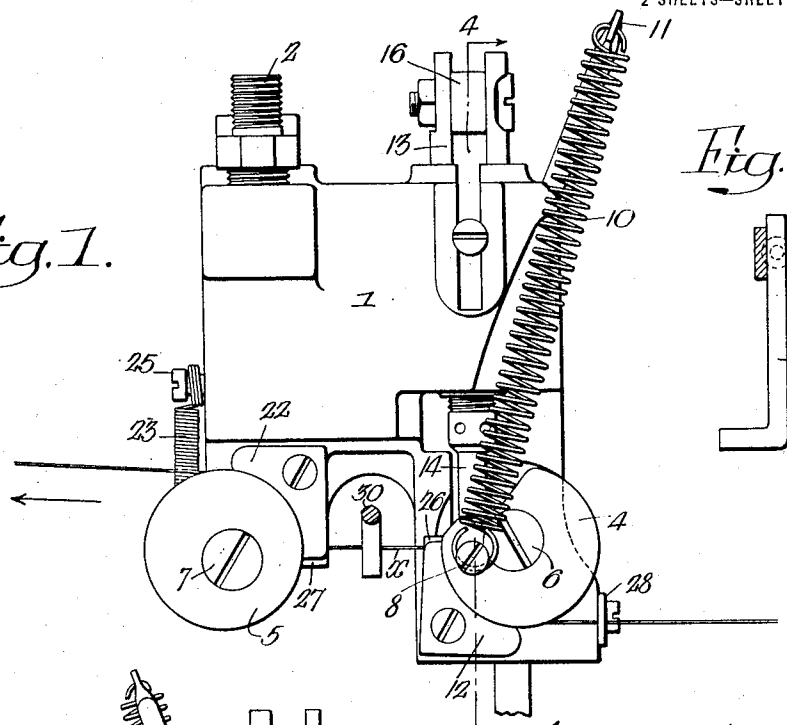
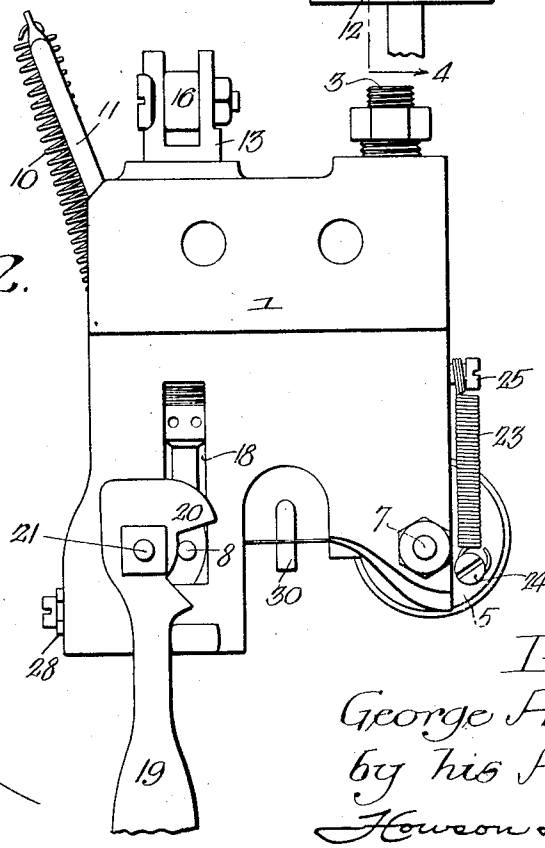


Fig. 7.

Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 5.

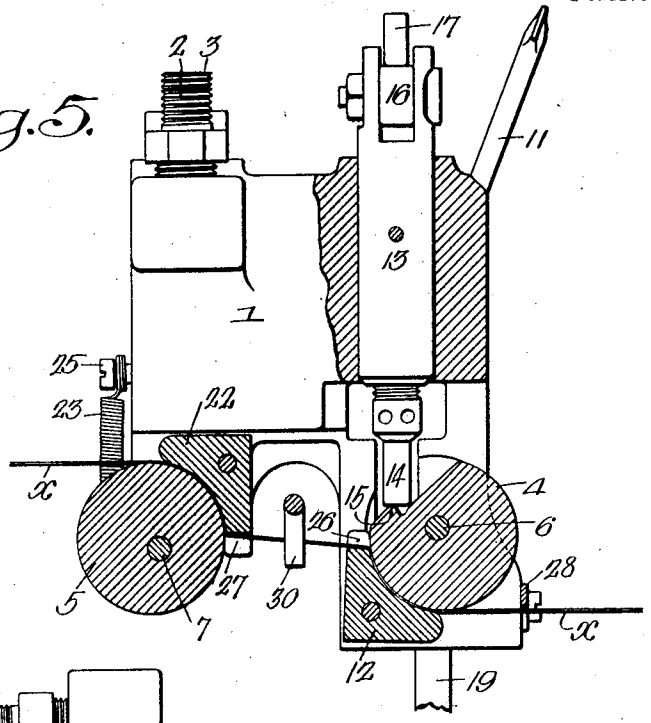


Fig. 3.

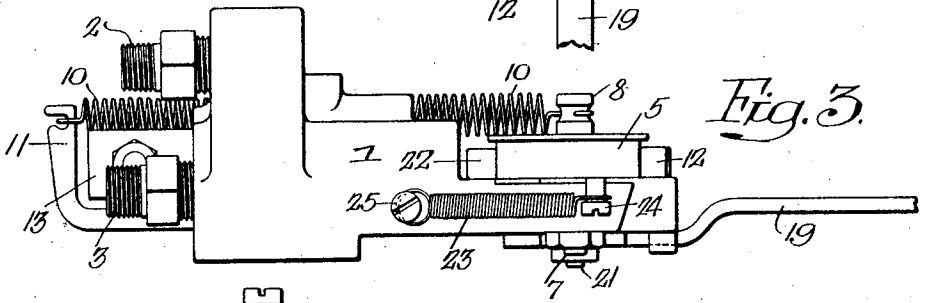


Fig. 4.

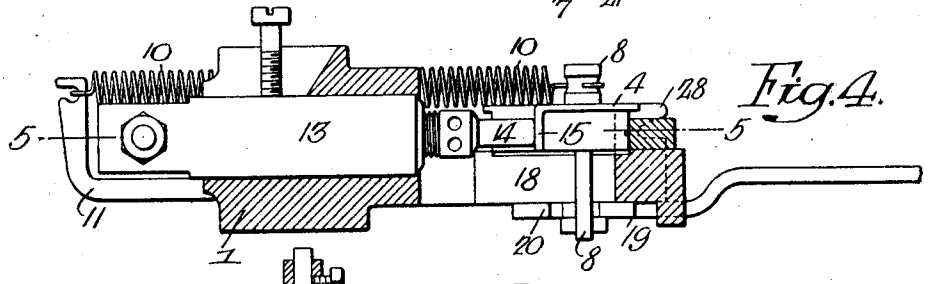
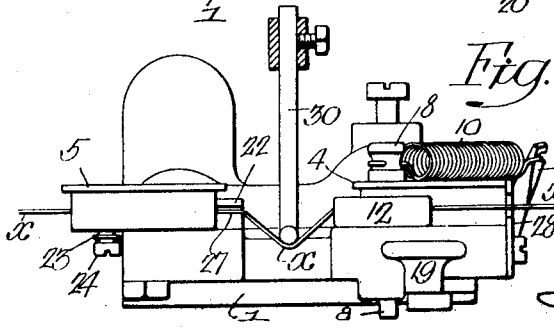


Fig. 6.



Inventor—
George A. Schick
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Howson & Howson

UNITED STATES PATENT OFFICE.

GEORGE A. SCHICK, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ADWEAR PROCESS SOLE LEATHER MACHINE CO., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION.

THREAD-MEASURING DEVICE.

1,329,933. Specification of Letters Patent. Patented Feb. 3, 1920.

Application filed September 27, 1917. Serial No. 193,598.

To all whom it may concern:

Be it known that I, GEORGE A. SCHICK, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented Thread-Measuring Devices, of which the following is a specification.

One object of this invention is to provide a relatively simple and positive device for periodically permitting the withdrawal of a predetermined length of thread, wire or similar body from a source of the same,—the arrangement of parts being such that after the desired amount of thread has been permitted to pass by reason of the operation of a suitable releasing device, it is so gripped that the serving of a further length is rendered impossible until said releasing mechanism is again operated.

I further desire to provide a device of the character described with means for periodically and automatically releasing the thread, as well as a novel device whereby such release may be effected by hand when desired,—the arrangement being such that there can be no tension on that part of the thread passing to a sewing or other machine when it is being manually withdrawn from the supply spool.

Another object of the invention is to provide a relatively simple, compact and substantial device for intermittently gripping and releasing a thread or like body of material.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which,

Figures 1 and 2 are respectively a plan and an inverted plan of a thread measuring device constructed according to my invention;

Fig. 3 is an elevation of one side of the device shown in Figs. 1 and 2;

Fig. 4 is a vertical section on the line 4—4, Fig. 1;

Fig. 5 is a horizontal section on the line 5—5, Fig. 4;

Fig. 6 is an elevation; and

Fig. 7 is a side elevation of the thread engaging member.

In the above drawings, 1 represents a casting constituting a supporting structure which may be made hollow and be provided with an outlet 2 and an inlet 3 for any desired heating medium such as steam. At one end this structure has rotatably mounted upon it a pair of eccentric gripping rollers 4 and 5, respectively journaled on spindles 6 and 7, both of which are in the form of screws having heads countersunk in the outer face of said rollers.

It is to be noted that these rollers are eccentrically mounted upon their supporting spindles and that the roller 4 has projecting from its top face a pin or screw 8 connected to one end of a coil spring 10 whose second end is attached to an arm 11 projecting from one of the corners of the casting 1;—the arrangement being such that said spring 10 at all times so acts on said roller as to tend to turn it on its spindle into gripping engagement with a shoe 12 rigidly fixed on the supporting structure 1.

This shoe engages the cylindrical face of the roller 4, preferably for about 90° of its curvature, so that a thread or like body of material passed between it and the shoe is gripped by reason of the action of the spring 10. In order to automatically release said thread so as to permit it to be drawn from a coil or spool for any desired purpose, I form the casting 1 to provide a guideway and in this mount a horizontally slidable plunger 13, having a longitudinally adjustable punch-like end 14, normally engaging a shoulder 15 on the roller 4 immediately adjacent the pin 8.

The opposite end of this plunger is forked to receive a roller 16 on which is operative a reciprocatory arm 17 periodically moved toward it by any suitable mechanism constituting no part of the present invention. Such movement forces the plunger 13 toward the roller 4, causing its end 14 to act on the shoulder 15 so as to turn said roller on its spindle in opposition to the spring 10, thereby moving its curved surface away from the shoe 12, and releasing the thread *x*.

As shown in Figs. 2 and 4, the pin 8 projects from the under face of the roller 4 and extends through a slot 18 below the under face of the casting 1. On said face adjacent this slot is mounted a lever 19, one of whose arms projects beyond one end of the casting 1 while its second arm 20 in the form of a hook, projects adjacent this extension of the pin 8 so that when said lever is swung in one direction on its fulcrum pin 21, this second arm engages the pin 8, forcing the roller 4 to turn on its

supporting spindle in opposititon to the spring 10 and thereby release the thread between it and the shoe 12.

The spindle screw 7 supports the second gripping roller 5 on the casting 1, preferably although by no means necessarily at or adjacent the level of the roller 4, and there is mounted on said casting a shoe 22, having a 90° circularly curved face engaging the curved face of said roller 5, against which it is held by a spring 23 acting between a pin 24 on said roller and a second pin 25 on the adjacent side of the casting 1.

The inwardly projecting arm of the shoe 12 and the outwardly projecting arm of the shoe 22 are respectively notched or forked at 26 and 27 to provide guides for the thread x and in addition the extreme right hand corner of the casting 1 has mounted upon it a notched or forked plate 28 constituting a thread guide. The end of the structure 1, between the rollers has a recess into which extends the end of a reciprocating finger 30 actuated in any desired manner so that its laterally extended end portion moves transversely of a straight line extending between the rollers.

With the above described arrangement of parts, the thread x, after being placed in the thread guide 28, is passed between the shoe 12 and the roller 4, thence through the guides 27 and 26 and between the shoe 22 and the roller 5. If it be assumed that the right hand end of the thread shown in Fig. 1, is in connection with a spool or other source of supply of the same, and its opposite end is run to a sewing or other machine in which it is utilized intermittently or continuously, it is obvious that tension exerted on said thread in the direction of the arrow, will have no effect, since while the roller 5 tends to move away from the shoe 22 so as to release said thread, the action of the latter on the roller 4 assists the spring 10 in causing said thread to be more tightly gripped against the shoe 12.

Thereafter when it is desired to feed the thread, the arm 17 is operated to force the plunger 13 toward the roller 4 so that it acts against the shoulder 15 thereof and rotates said roller against the action of the spring 10 so as to release the thread x. The subsequent movement of the finger 30 from a raised position to the position shown in Fig. 6, causes the thread to be drawn from the source thereof in an amount which may be exactly determined by governing the time during which the plunger 13 is retained in its inner position and also by the stroke of the finger 30. When the desired amount of the thread has been taken from the source, the return movement of the arm 17 permits the spring 10 to turn the roller 4 on its spindle 6, until it again grips the thread against the shoe 12, whereupon further passage of said thread into the device is absolutely prevented. Thereafter a sewing or other machine exerting tension on the thread may draw the length pulled in by the finger 30, between the roller 5 and the shoe 22, which however prevent tension being exerted on the thread in the sewing or other machine while the finger 30 is drawing it in from the spool.

If it be desired to draw a length of thread through the machine independently of the automatic measuring and locking apparatus provided by the arm 17 and its associated parts, the manual turning of the lever 19 in the direction of the arrow, Fig. 2, will bring the arm 20 thereof against the pin 8 and will turn the roller 4 against the spring 10, whereupon that part of the thread between the two rollers may be pulled out by the operator to any desired extent. The tension due to said pull is not transmitted to the machine or device to which said thread passes, since the spring 23 as well as the tension itself, maintains the roller 5 in gripping engagement with the thread passing over the shoe 22 as before. When the desired length of thread has been drawn out between the rollers 4 and 5, the lever 19 is released and by tension exerted upon the delivery end of the thread beyond the roller 5, the slack may be freely drawn out between said roller and the shoe 22.

From the above description it will be noted that both rollers with their coöperating shoes positively lock the thread from movement, and this action is due to the fact that the tension exerted upon the thread serves to increase the force gripping it so as to prevent such movement. At the same time measured lengths of the thread may be periodically delivered, depending in amount upon the time during which the roller 4 is held away from its shoe by the action of the arm 17 and the releasing plunger 13 as well as upon the length of stroke of the finger 30. When desired, any required amount of slack may be drawn out between the gripping rollers and during such operation the roller 5 effectually prevents the drawing back of the thread from the machine to which it has been delivered.

I claim:—

1. The combination of a supporting structure, a pivotally mounted member thereon having a curved portion; a shoe mounted to coöperate with said curved portion of the member; means tending to turn the member in one direction on its pivot to cause its curved portion to clamp a thread against the shoe; and means for positively turning said member in the opposite direction to cause it to release the thread.

2. The combination in a thread measuring apparatus of two thread gripping eccentrics; shoes mounted to coöperate with

said eccentrics for preventing thread being drawn into the space between them; means for periodically releasing one of the eccentrics; and means operative on that part of the thread between the eccentrics for drawing it through one of them when it is released.

3. The combination of a supporting structure; a roller eccentrically mounted thereon; a shoe carried by the structure adjacent the roller; means tending to turn the roller into gripping engagement with the shoe; and means for turning the roller to release the thread clamped against the shoe.

4. The combination of a supporting structure; a roller eccentrically mounted thereon; a shoe carried by the structure adjacent the roller; a spring operative to rotate the roller to clamp a thread against the shoe; and means acting to oppose the spring to cause the roller to release the thread.

5. The combination of a supporting structure; a roller eccentrically mounted thereon and provided with a shoulder; a shoe mounted on the supporting structure adjacent the roller; a member mounted to engage said shoulder to rotate the roller away from the shoe; and a spring tending to turn the roller in opposition to said member.

6. The combination of a supporting structure having a guideway; a roller eccentrically mounted on said structure and provided with a shoulder; a shoe adjacent the roller; a spring operative on the roller to cause it to clamp a thread against the shoe; and a plunger operative in the guideway in position to engage the shoulder of the roller to cause it to release the thread clamped against the shoe.

7. The combination of a supporting structure; two rollers eccentrically mounted thereon; two shoes respectively mounted adjacent the rollers; means acting on the rollers to cause them to clamp a thread against their respective shoes; and means for periodically turning one of the rollers to cause it to release its thread.

8. The combination of a supporting structure; two rollers eccentrically mounted thereon; two shoes respectively mounted adjacent the rollers; means acting on the rollers to cause them to clamp a thread against their respective shoes; means for periodically turning one of the rollers to cause it to release its thread; with a manual releasing device operative on the latter roller.

9. The combination of a supporting structure; two thread clamping eccentrics; shoes mounted on said structure in positions to cooperate with the eccentrics respectively to prevent a thread being drawn from between them; and means for causing one of said eccentrics to release the thread.

10. The combination in a supporting structure; two rollers eccentrically mounted thereon; shoes respectively mounted on the structure in position to coöperate with the rollers; springs operative to normally turn the rollers into positions to clamp a thread against their respective shoes; a projection on one of the rollers; and a lever operative on the projection to turn the roller in opposition to its spring.

11. The combination of a supporting structure; a roller eccentrically mounted thereon; a shoe adjacent the roller; a spring operative on the roller to turn it into clamping engagement with the shoe; a pin projecting from the roller; a lever fulcrumed on the supporting structure in position to turn the roller in opposition to its spring; with a plunger guided in the structure in position to act upon the roller also in opposition to said spring.

In witness whereof I affix my signature.

GEORGE A. SCHICK.