Jan. 27, 1942. H. TRECKMANN ET AL 2,271,049

WINDING FRAME

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Fig.1

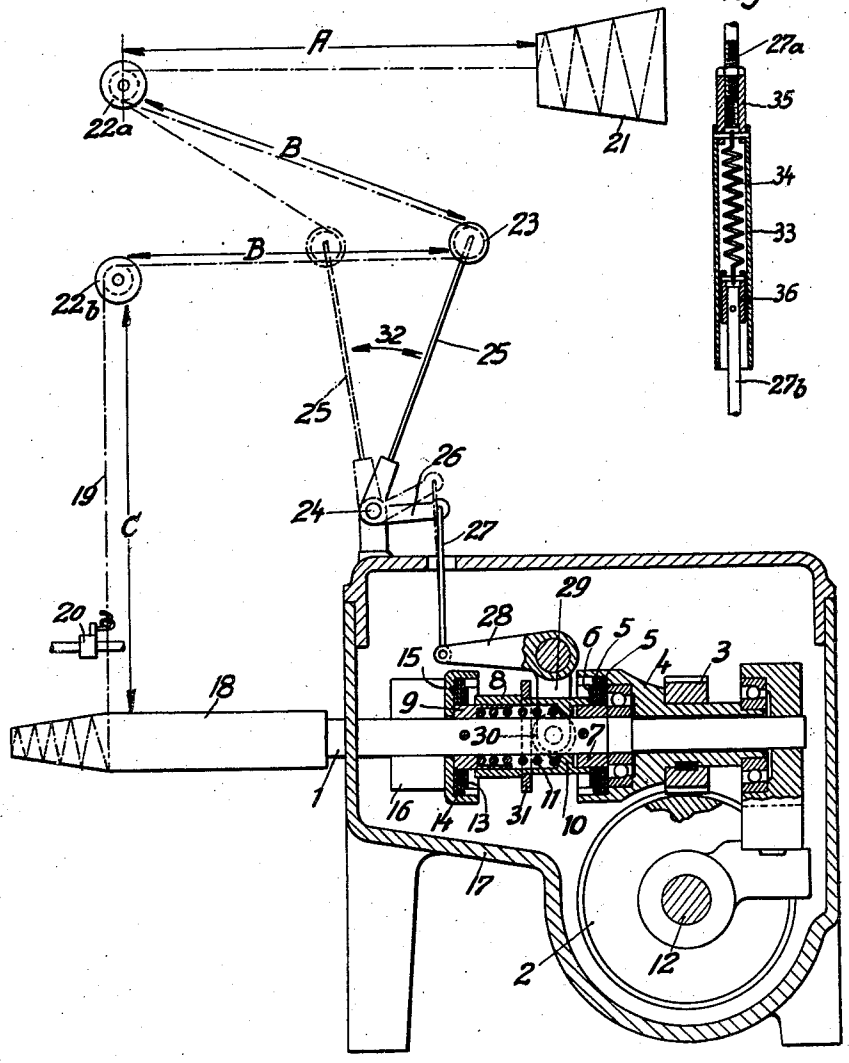

Fig.2

Inventors
Hans Treckmann and
Carl-Georg Rosenkranz,
By Watson E. Coleman.
Attorney

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WINDING FRAME

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Fig. 1a

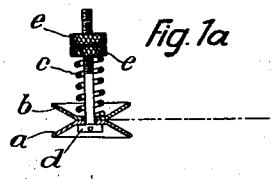
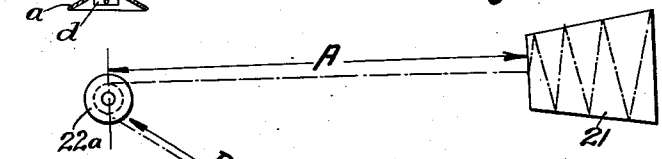


Fig. 3



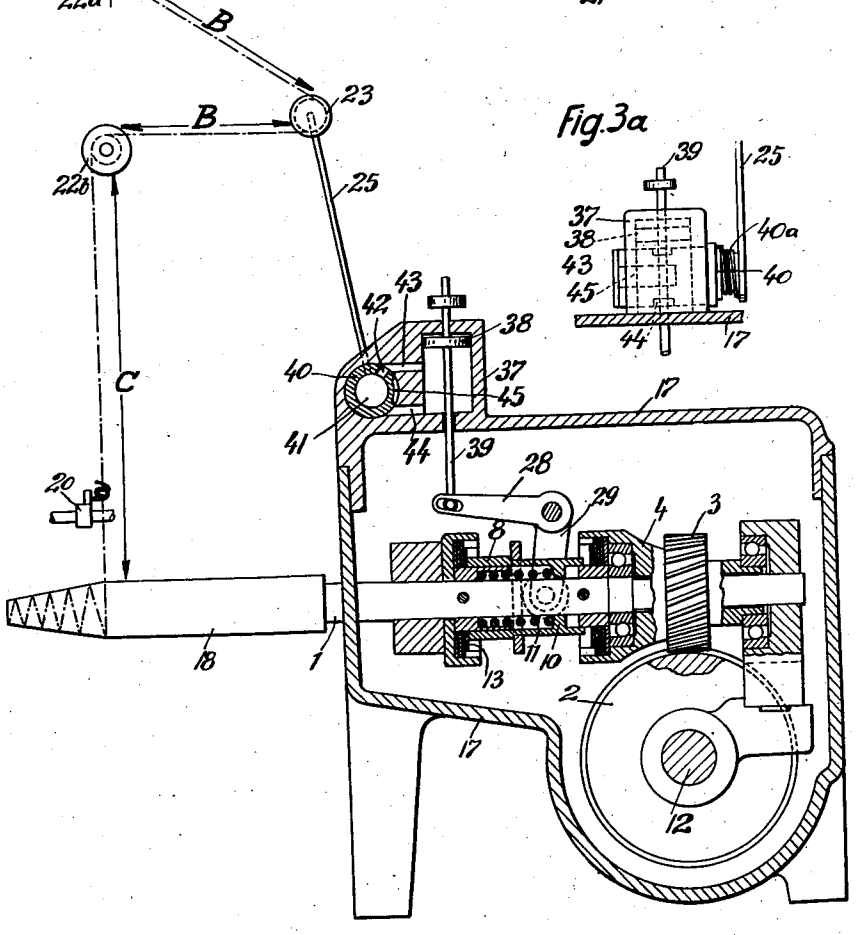


Fig. 3a

Inventors
Hans Treckmann and
Carl-Georg Cornelius.
By Watson E. Coleman,
Attorney

Jan. 27, 1942. H. TRECKMANN ET AL 2,271,049

WINDING FRAME

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Fig. 5

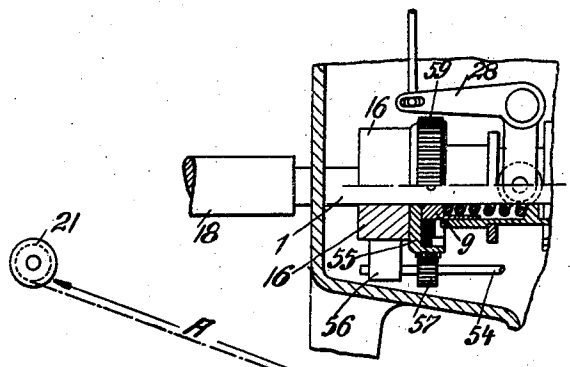
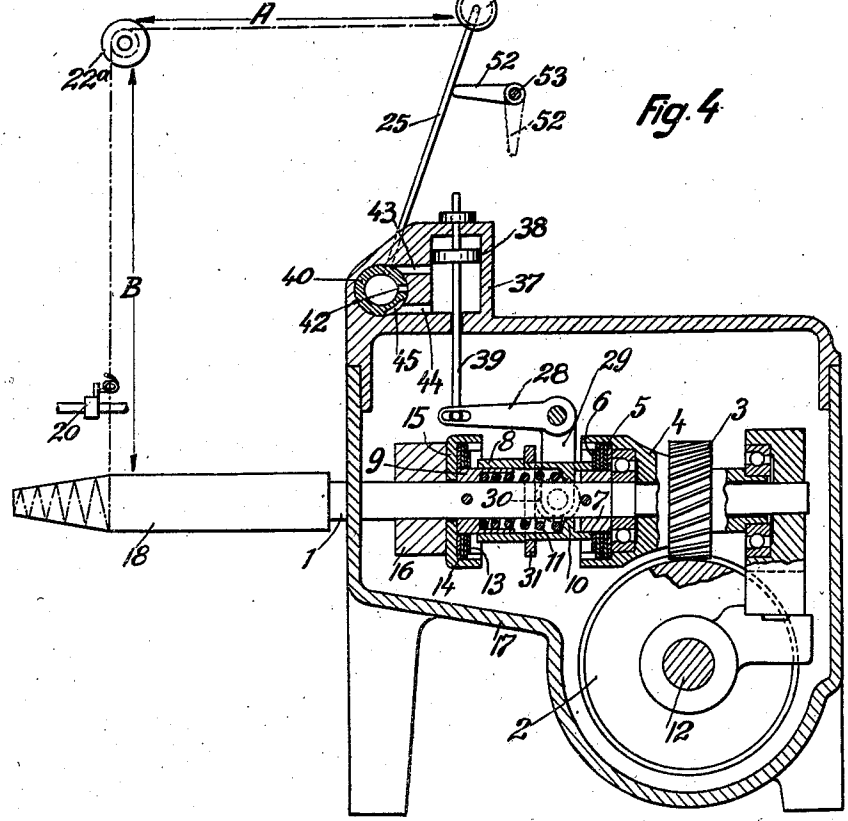


Fig. 4



Inventors
Hans Treckmann and
Carl-Georg Rodenkranz,
By Watson & Coleman, Attorneys

Jan. 27, 1942. H. TRECKMANN ET AL 2,271,049

WINDING FRAME

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Fig.6

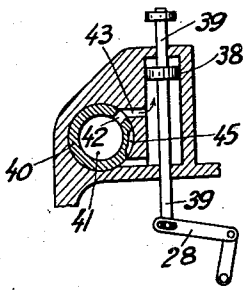


Fig.7

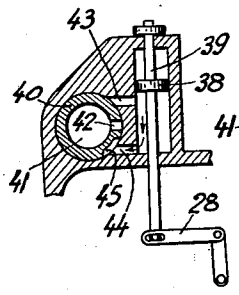


Fig.8

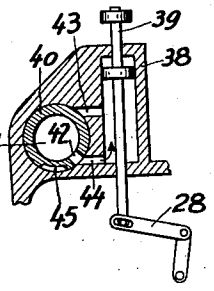


Fig.9

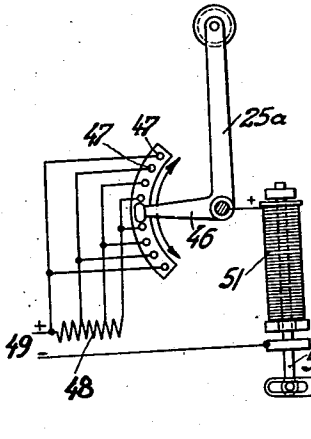
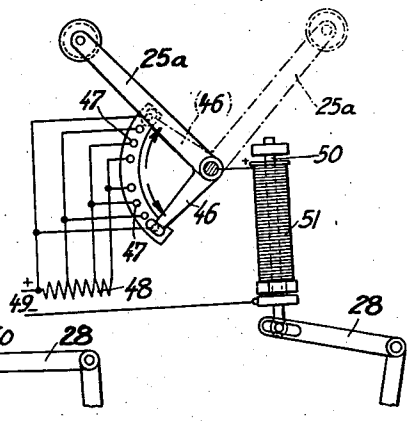


Fig.10



Inventors

Hans Treckmann and

Carl-Georg Rosenkranz,

By Watson E. Coleman.

Attorney

Patented Jan. 27, 1942 2,271,049

UNITED STATES PATENT OFFICE

2,271,049

WINDING FRAME

Hans Treckmann and Carl-Georg Rosenkranz, Wuppertal, Germany, assignors to Messrs. Halstenbach & Co., Wuppertal - Wichlinghausen, Germany, a German partnership company

Application August 16, 1939, Serial No. 290,482
In Germany August 19, 1938

6 Claims. (Cl. 242—45)

This invention relates to winding frames having a plurality of independent winding points, which are stopped after completion of the winding operation and are again started for the next winding operation after the pirn has been exchanged, the drive and the braking of the winding spindle being controlled by the tension of the yarn.

It is the object of the invention to improve generally on winding frames of this description with a view to maintaining the tension of the yarn as constant as possible when winding is taking place, so as to avoid a breaking of the yarn and an interruption in the winding operation.

For this purpose means are provided in order that, upon increasing tension of the yarn, which may be caused, for example, by the fact that upon the withdrawal of the yarn from the supply package it may tend to adhere to or be retained by the package or is prevented from running off smoothly by reason of projections or swellings of the package, the winding spindle will be stopped, and thereafter, by way of short jerks applied to the yarn, the latter will be furnished with an opportunity of releasing itself automatically from the cause of the increasing tension, i. e., the obstruction in the feed, before it exhibits the tendency to break and thus to bring about a definite interruption in the winding operation.

There is provided for this purpose, additional to the disc clutch employed in the conventional form of winding spindle drive, a second disc clutch acting as braking element, and both clutches are controlled by the tension of the yarn through the medium of a common shifting element, for example by means of a pendulating yarn feeler, in such a way that upon each control movement at first the one clutch is disengaged and then the other is made to be effective.

Owing to the fact that the action of the drive on the winding spindle is first interrupted a further increase in the tension of the yarn is prevented. If the winding spindle is then braked, the yarn is caused to sag. This sag of the yarn takes effect on the yarn feeler in such a form that the feeler is rocked backwards and by reason of its action on the shifting member causes the braking effect to be removed, so that finally the winding spindle is again set into operation. In consequence of these successive operations consisting in the disengagement of the drive and the braking of the spindle, followed by the release of the braking action and the reconnection of the drive, there are exerted on the yarn a series of short jerks, which continue to prevail until the yarn has been released automatically from the cause of the increasing tension.

To enable the braking action to take effect more quickly the arrangement, according to the invention, may also be such that the otherwise fixed discs of the brake clutch can be caused to rotate continuously, preferably at a low speed, in opposition to the direction of rotation of the spindle. At the moment when the braking action is brought to bear the winding spindle, therefore, exhibits the tendency to perform rotation in the opposite direction, and thus to bring about the tensioning of the yarn, followed by the sagging of the same, even more quickly than otherwise. In this way the operations aforesaid resulting in the application of short and rapid jerks on the yarn are caused to be even more effective, so that the sensitivity of the apparatus in response to an increase in the tension is increased accordingly.

For a proper winding operation the tension of the yarn acting on the pivoted yarn feeler must accordingly be the working tension, which is arranged to be as near as possible to the tensile limit of the yarn, so that upon the winding operation the pirn will be wound sufficiently tightly to comply with the requirements of its subsequent use. It may nevertheless occur, therefore, in the case of high winding speeds and heavy supply packages that the pirn being wound is not stopped sufficiently quickly to prevent the yarn from breaking. Other improvements are accordingly also provided by the invention, which are based on recognition of the fact that this possibility of the yarn breaking can also be eliminated if not the complete working tension, but merely a fraction, say, one-half or one-third, of the tension necessary for obtaining a tightly wound pirn is utilised for controlling the driving and braking elements, whereby the difference in tension as compared with the tensile limit is increased in the same proportion.

According to the invention, this is accomplished by the fact that the working tension necessary for the proper winding of the pirn is brought about between the supply package and the pirn being wound in two or more stages by braking means of intermittently increased effect, the pendulating yarn feeler then being included in a stage, the tension of which is less than the working tension of the yarn. The angular resistance of the yarn feeler, which is

produced by a spring or the like, is then adjusted in such a manner that when the tension of this stage is exceeded it acts on the two disc clutches one after the other.

If the yarn is taken from a rotatable bobbin, i. e., tangentially from the package, it is sufficient to provide two tension stages. If, however, the yarn is being withdrawn endwise from the bobbin, i. e., in the direction of the central axis, it is desirable that three tension stages be provided. In both cases the yarn feeler is included in the last stage but one. At the same time the arrangement may also be such that in the rod mechanism between the yarn feeler and the shifting member for the two disc clutches there is included a yielding connecting member, in order that after completion of the movement on the part of the shifting member necessary for bringing about a complete braking action an additional rocking movement of the yarn feeler, i. e., a further yielding on the part of the yarn, is able to take place without obstruction.

According to an additional feature of the invention the rocking movement of the yarn feeler can be transmitted to the shifting member for the two clutches by way of a liquid or gaseous pressure agent controlled by the yarn feeler, or also electro-magnetically. This permits of an extremely sensitive and instantaneously acting interruption of the drive with braking with increased braking action. The re-establishment of the normal running conditions upon re-starting of the spindle up to the top speed of the same is also improved in this way.

Certain embodiments of the invention are illustrated by way of example in the accompanying drawings.

Fig. 1 shows a single winding point with driven winding spindle and pendulating yarn feeler in positive connection with the shifting member for the driving and braking clutches.

Fig. 1*a* shows in section the braking device 22*a* according to Fig. 1.

Fig. 2 shows on enlarged scale in cross-section a modification of the connecting rod between the yarn feeler lever and the bell crank lever for the shifting member for the two clutches permitting of a yielding connection.

Fig. 3 shows an arrangement similar to Fig. 1, wherein the movement of the yarn feeler is transmitted to the shifting member by a liquid or gaseous pressure agent.

Fig. 3*a* is an elevational view showing the connection of the rotary slide illustrated in Fig. 3 with the yarn feeler.

Fig. 4 illustrates the arrangement according to the invention in conjunction with a rotatably mounted supply bobbin, from which, therefore, the yarn is drawn tangentially.

Fig. 5 is a modification of Fig. 3 showing a brake drum with drive opposed to the direction of rotation of the winding spindle.

Figs. 6, 7 and 8 show different positions of the pressure cylinder and the pressure valve.

Figs. 9 and 10 show diagrammatically an electro-magnetic form of control for the shifting member for the two clutches.

In the embodiment according to Fig. 1 the spindle 1 receives its motion from a gear 3 by way of a worm gear 2, the said gear being mounted firmly on a sleeve 4 which is supported at both ends by ball bearings. The tubular cavity in the one end of the sleeve 4 carries axially movable discs 5 co-operating with corresponding discs 6, which are connected so as to be axially shiftable to a collar 7 mounted on the spindle 1, and are acted upon by a shifting member 8, which is designed as a sleeve and is guided at the one end on the collar 7.

The opposite end of this shifting member 8 is supported in axially slidable fashion by a second collar 9, which is also mounted on the spindle 1. An inner rib 10 in the sleeve 8 is acted upon by a coil spring 11, which bears against the collar 9 and by reason of its shifting effect on the sleeve 8 has the tendency to maintain the discs 6 and 5 of the driving clutch in engagement with one another, so that in this case the driving force emanating from the worm wheel 2 on the shaft 12 is transmitted by way of the gear 3, the sleeve 4 and the discs 5 and 6 to the collar 7 firmly mounted on the spindle 1.

If the member 8 is moved in opposition to the spring 11, the clutch discs 5 and 6 are released from engagement and the drive ceases to act on the spindle 1. If the member 8 is moved still further, it enters into engagement with the discs 13 and 14, of which the former are mounted to be axially slidable on the collar 9, whilst the latter are arranged to slide axially in a fixed brake drum 15, which is firmly connected to the bearing 16 for the casing 17 of the gear box, which latter is mounted in the frame of the winding machine.

In order to facilitate the stopping of the winding spindle 1 when the brake clutch becomes effective, the arrangement can be such that the otherwise fixed clutch discs 14 can be made to rotate continuously in opposition to the direction of rotation of the spindle 1 and preferably at a lower speed than the said spindle. For this purpose, in accordance with Fig. 5, the brake drum 15 is rotatably guided between the collar 9 and the bearing 16 and is furnished on its outer periphery with a rim of teeth 58 meshing with a pinion 57 on a spindle 54 mounted in the bearing 56. The shaft 54 receives its motion in a manner not particularly shown from the shaft 12 of the gear box 17 (Fig. 1).

Fig. 1 shows on the spindle 1 a pirn 18, which is produced by guiding the yarn 19 in the conventional fashion by means of a traversing yarn guide 20. The yarn 19 comes from a supply bobbin 21, from which, in the embodiment according to Fig. 1, it is withdrawn endwise, i. e., axially, whereupon it passes through a braking device 22*a*, over the roller 23 of a feeler lever 25 pivotally mounted at 24 and to a second braking device 22*b* and thence through the eyelet of the traversing yarn guide 20. The two braking devices 22*a* and 22*b* consist in the conventional manner of two oppositely disposed plates *a* and *b* (Fig. 1*a*), which are subjected to a regulable pressure by means of a threaded bolt *g*, two adjustment nuts *e*, *e* and a coil spring *c*. They are so adapted to one another that the tension necessary for the winding of the yarn on the pirn 18 is imparted to the yarn by the braking device 22*b*, whilst the braking device 22*a* tensions the yarn proceeding from the bobbin 21 to the braking device 22*b* to a smaller extent.

With this disposal of the two braking devices 22*a* and 22*b* there are accordingly produced in the yarn between the bobbin 21 and the pirn 18 three tension ranges as follows: the tension range A along the path between the bobbin 21 and the braking device 22*a*, the tension range B, which extends from the braking device 22*a* over the roller 23 of the feeler lever 25 to the braking device 22*b*, and the tension range C, in which

tension is applied to the yarn 19 by the braking device 22b before it is wound on the pirn 18.

As shown by Fig. 1, the yarn feeler lever 25 is disposed in the tension range B, in which the tension is less than in the range C, in which there prevails the working tension.

The yarn feeler lever 25 is connected by means of its bell crank arm 26 by way of a connecting rod 27 to a bell crank lever 28, which is mounted in fixed position in the casing 17 and by means of its second arm 29 and a pressure roller 30 acts in controlling fashion, against the action of the spring 11, on a flange 31 on the shifting member 8. The spring 11 determines the angular resistance of the lever 25 and must accordingly be adapted to the limited braking effect of the braking device 22a.

If there occurs in the yarn 19 within the range B a tension which exceeds the angular resistance of the lever 25, this acts in the direction of the broken-line arrow 32 on the lever 25 to rock the same forwards. In Fig. 1 it is assumed that the increase in the tension is so great that the lever 25 is moved into the position in dash-dotted lines, in which the arm 26 has rocked the bell crank lever 28 to such extent that during this rocking action the shifting member 8, overcoming the effect of the spring 11, has moved the discs 5 and 6 of the driving clutch out of engagement and has thereafter acted in braking fashion on the discs 13 and 14, causing the spindle 1 to be stopped. If the tension of the yarn again recedes, the lever 25 is returned into the position shown in Fig. 1 in full lines. In this case at first the brake discs 13 and 14 are moved out of engagement with one another, and under the action of the released spring 11 the drive is again established by way of the discs 5 and 6.

In this arrangement, therefore, the tension utilised for the control of the shifting element for the two clutches is below the actual working tension, which may, for example, be twice as great as the tension in the range B. An increase of the tension in the range B does not vary the working tension of the yarn 19 upon the winding operation. This remains unimpaired during the whole time which is required for the pendulating movement of the feeler 25. In consequence the actual working tension of the yarn is left substantially constant and unimpaired, and the yarn prevented from approaching such tensile limit as to cause breakage even though the operations may be accompanied by some unavoidable inertia in the working parts.

The shifting member or sleeve 8 under the action of the coil spring 11 maintains the discs 5 and 6 of the driving clutch operative as long as no controlling movement is transmitted from the pendulating yarn feeler 25 to the shifting member or sleeve 8 or, in other words, as long as the tension of the yarn 19 remains constant within those limits which require no alteration in the speed of the spindle. The length of the member or sleeve 8 is such that during this operative engagement of the member or sleeve 8 with the discs 5 and 6, there is no operative contact between the member or sleeve 8 and the discs 13 and 14 of the braking clutch. When the member or sleeve 8 is, under normal operative conditions, not in operative or frictional contact with the braking discs 13 and 14, the shifting of the member or sleeve 8 toward the braking clutch allows the driving clutch to become inoperative before any friction is set up between the shifting member or sleeve 8 and the braking discs 13 and 14. While the braking discs 13 and 14 are gradually set in operation, the initial friction produced reacts on the member or sleeve 8 and causes the same to stop rotation. This results in a material reduction in power waste by friction. The gradual application of braking and driving movement as a result of the operation of the shifting member or sleeve 8 eliminates the use of any shock absorbing means. The application of braking and driving movement by this member or sleeve 8 enables the production of tightly wound pirns exactly in accordance with the requirements of its subsequent use together with the further advantageous feature of delicate adjustment of the controlling mechanism which is desirable in connection with the winding of delicate yarns at a very high speed.

To enable the feeler lever 25 also to respond to increasing tension of the yarn in the range B when by means of the shifting member 8 the braking discs 13 and 14 have already been moved into complete engagement with one another, so that the braking movement has been fully covered, the arrangement according to the invention is also such that the connecting member 27 between the arm 26 and the bell crank lever 28 is made to be of a yielding nature. In the embodiment according to Fig. 2 this is accomplished by making the connecting member 27 of two parts 27a and 27b, which are connected together in such fashion within a sleeve 33 by means of a coil spring 34 that the one end of the spring is attached to the bush 35 of the member 27a, whilst its other end is connected to the bush 36 of the member 27b. The bush 36 is adapted to slide within the sleeve 33, whilst the bush 35 is firmly connected to the sleeve. The initial tension of the spring 34 must be greater than the initial tension of the spring 11 between the two clutches, so that upon the lifting of the arm 26 at first the spring 11 yields until it has become rigid. Upon additional movement of the lever 25 the resiliency of the spring 34 then takes effect.

If the yarn is being drawn from a rotatably mounted bobbin, it will be sufficient in the ordinary way to provide two tension ranges, as indicated in Fig. 4. The yarn feeler is then not situated in the tension range B, as in Figs. 1 and 3, but in the first tension range A.

In the embodiment according to Fig. 3 there is interposed between the yarn feeler 25 and the angle lever 28 of the shifting member 8 a compressed air cylinder 37 having a piston 38, the rod 39 of which slides in fixed bearings and engages by means of a stud in a slot in the angle lever 28. With the interior of the cylinder 37 there co-operates a rotary slide valve 40, which carries the feeler lever 25 in direct fashion and is controlled by the pendulation of the said lever. The lever 25 is acted upon by a coil spring 40a (Fig. 3), which is adapted to the effect of the braking device 22a and determines the angular resistance of the lever 25, which resistance upon the rocking of the lever 25 requires to be overcome by the increasing tension of the yarn in the tension range B. The interior 41 of the rotary slide 40 is in communication with compressed air or a liquid under pressure and possesses a port 42, which in its extreme positions co-operates with passages 43 and 44 leading to the cylinder 37. In addition there is also provided in the rotary slide valve 40 a recess 45, which in the axial direction communicates with the atmosphere (Fig. 3a) and by means of which the

pressure created in the cylinder 37 by the pressure agent can again be exhausted. In all cases in which the feeler lever 25 is not directly acted upon by the spring 11 of the shifting member 8 there is provided for the same the spring 40a (Fig. 3a), which is adapted to the braking device 22a. This also applies to the embodiment according to Figs. 9 and 10 still to be described.

The three positions capable of being obtained with this rotary slide valve are illustrated in Figs. 6, 7 and 8. In the position in Fig. 7, which corresponds to the position of the feeler in Fig. 4, the slide valve 40 is ineffective, and the lower side of the piston 38 communicates with the atmosphere by way of the recess 45. There is accordingly no action on the shifting member 8 for the two groups of discs. If the tension of the yarn increases, so that the lever 25 is moved into the position shown in Fig. 3, the port 42 is thus placed in communication with the passage 43 and allows the pressure agent to flow underneath the piston 38, which by way of the piston rod 39 actuates the bell crank lever 28, the shifting member 8 thereupon moving the discs of the driving clutch out of engagement and the discs of the braking clutch into engagement with one another. By suitable dimensioning of the port 42 in relation to the passage 43 there can be obtained either a gradual or an abrupt action on the piston 38. If the tension of the yarn decreases and in consequence the feeler lever 25 is again returned into its position according to Fig. 4, the rotary slide valve 40 will again be moved into the position according to Fig. 7. If the tension of the yarn ceases entirely, for example when the supply bobbin is exhausted or for other reasons, the lever 25 follows the pull of the spring 40a, and the rotary slide valve 40 is then moved into the position in Fig. 8, in which the port 42 communicates with the passage 44, through which the pressure agent is also admitted and lifts the piston 38 into the position according to Fig. 6, disconnecting the drive and stopping the spindle by way of the braking discs. When the lever 25 is again rocked into engagement with the thread the rotary slide valve 40 is returned into the position in Fig. 7, and the pressure agent below the piston 38 is exhausted through the passage 44 and the recess 45 towards the outside.

Figs. 9 and 10 illustrate diagrammatically an electromagnetic form of control. The feeler arm 25a acts by means of a lever arm 46 on electric contacts 47, which are connected to different resistance ranges of a resistance 48 in the electric circuit 49. The bell crank lever 28 of the shifting member 8 is pivoted to the core 50 of a coil 51 and is shifted therein, dependent on the resistance disconnected by the movement of the lever arm 46, to an extent corresponding to the degree of oscillation of the feeler 25a. In Fig. 9 there is shown a zero position, and in Fig. 10 an extreme position which is brought about by maximum tension of the yarn. If there is no tension of the yarn acting on the feeler 25a, the lever arm 46, under the action of the previously described spring 40a, is rocked in the opposite direction, which is indicated in Fig. 10 in dash-dotted lines, and in this way there are disconnected successively the same resistance ranges as in the case of the previously described movement in the opposite direction. In consequence the effect obtained is also the same, that is to say, the drive is disconnected, the brake is caused to take effect and the spindle is stopped.

When exchanging the pirn the winding spindle is stopped by a device which operates independently of the feeler 25. The winding spindle 1 is again started by the same means. Upon the removal of the wound pirns the yarn proceeding from the supply bobbin is for a moment without tension, and the feeler in the embodiments according to Figs. 3 to 10 might respond to the pull of the spring 40a acting thereon and fall into the rear position. The port 42 of the rotary slide valve 40 would then be opposite the passage 44 and pressure agent would flow below the piston 38, lifting the latter and causing the spindle to be braked. In this case, if the drive for the winding spindles is adapted to be started by the pirn exchanging means, the spindles would not be able to re-start, as they would be firmly held by the brake. To avoid this there is also provided according to Fig. 4 a catch 52, which can be pivoted at 53 into a position within range of the feeler 25 and prevents the latter during the substitution of the pirns from falling backwards, holding the feeler in a position (Fig. 7) in which the interior of the cylinder communicates with the recess 45 in the rotary slide valve 40. The catch 52 is preferably actuated by the pirn substituting means, so that it returns automatically into the broken-line position when the pirn supply member again moves away from the spindles.

What we claim as new and desire to secure by Letters Patent is:

1. In a winding frame the combination comprising a winding spindle, means for driving said spindle, a disc clutch included in the driving means, a second disc clutch for braking the spindle, a sleeve mounted on the spindle between the first clutch and second clutch, means for constantly urging the sleeve into engagement with the first clutch normally to maintain said first clutch effective, said sleeve being free of contact and spaced from the second clutch when in its normal position, such space between the sleeve and the second clutch allowing the sleeve to move away from and out of engagement with the first clutch before engaging the second clutch to make said second clutch effective when the sleeve is moved in a direction away from the first clutch, a pendulating yarn feeler having a part engaged by the yarn in advance of the spindle, an operative connection between the yarn feeler and the sleeve to move the sleeve into effective engagement with the second clutch when the yarn feeler swings in one direction caused by abnormal tension of the yarn upon the feeler, the operative connection between the yarn feeler and the sleeve comprising a bell crank lever supported adjacent to the sleeve, one arm of said bell crank lever being engaged with the sleeve, a rock arm movable with the pendulating yarn feeler, and a connecting rod engaged with the rock arm and the second arm of the bell crank lever.

2. In a winding frame the combination comprising a winding spindle, means for driving said spindle, a disc clutch included in the driving means, a second disc clutch for braking the spindle, a sleeve mounted on the spindle between the first clutch and second clutch, means for constantly urging the sleeve into engagement with the first clutch normally to maintain said first clutch effective, said sleeve being free of contact and spaced from the second clutch when in its normal position, such space between the sleeve

and the second clutch allowing the sleeve to move away from and out of engagement with the first clutch before engaging the second clutch to make said second clutch effective when the sleeve is moved in a direction away from the first clutch, a pendulating yarn feeler having a part engaged by the yarn in advance of the spindle, an operative connection between the yarn feeler and the sleeve to move the sleeve into effective engagement with the second clutch when the yarn feeler swings in one direction caused by abnormal tension of the yarn upon the feeler, the operative connection between the yarn feeler and the sleeve comprising a bell crank lever supported adjacent to the sleeve, one arm of said bell crank lever being engaged with the sleeve, a rock arm movable with the pendulating yarn feeler, a connecting rod engaged with the rock arm and the second arm of the bell crank lever, said connecting rod comprising two sections, and a retractile element connecting said sections whereby said pendulating feeler will be enabled to pendulate under increasing tension of the yarn after it has moved said clutch member to the limit of its movement for making clutch engagement for braking said spindle.

3. In a winding frame the combination comprising a winding spindle, means for driving said spindle, a disc clutch included in the driving means, a second disc clutch for braking the spindle, a shifting member positioned between said first clutch and said second clutch, a spring element coacting with the shifting member and of a tension to normally urge said shifting member toward the first clutch and in effective engagement therewith, movement of the shifting member against the tension of said spring element freeing the shifting member from the first clutch and bringing the same into effective engagement with the second clutch, a supply bobbin, means between said bobbin and the spindle for tensioning the yarn travelling from the bobbin to the spindle, a pendulating yarn feeler with which engages the portion of the yarn under tension, and an operative connection between the yarn feeler and the shifting member, said operative connection being so constructed and assembled to provide means to move the shifting member free of the first clutch and into operative engagement with the second clutch upon movement of the pendulating feeler resulting from increased tension thereon by the yarn engaged therewith, the tension of the spring element resisting the normal tension of the yarn upon the pendulating feeler.

4. In a winding frame the combination comprising a winding spindle, a pirn on the winding spindle onto which the yarn is wound, a supply bobbin off which yarn is unwound to become wound on said pirn, a tension device through which the yarn passes preliminary to its winding on said pirn and by which the yarn is maintained to wind upon said pirn at a determinate tension, and mechanism controlling the yarn in its passage between said supply bobbin and said tension device including a pendulating yarn feeler having a part engaged by the yarn in its passage between the supply bobbin and said tension device and movable by change in the attendant tension of the yarn, means for yieldingly controlling said pendulating feeler whereby the yarn in the stage engaging it will in the normal running thereof be tensioned thereby in an amount less than the tension of the yarn in the stage between said tension device and said pirn, a driving means for said spindle including a clutch, a clutch for braking said spindle, a movable clutch member by which said clutches may be thrown on or off, respectively, dependent upon the position of said clutch member, and means for controlling the position of said clutch member by said pendulating feeler dependent upon the turned position thereof.

5. In a winding frame the combination comprising a winding spindle, a pirn on the winding spindle onto which the yarn is wound, a supply bobbin off which yarn is unwound to become wound on said pirn, a tension device through which the yarn passes preliminary to its winding on said pirn and by which the yarn is maintained to wind upon said pirn at a determinate tension, and mechanism controlling the yarn in its passage between said supply bobbin and said tension device including a pendulating yarn feeler having a part engaged by the yarn in its passage between the supply bobbin and said tension device and movable by change in the attendant tension of the yarn, a driving means for said spindle including a clutch, a clutch for braking said spindle, a movable clutch member by which said clutches may be thrown on or off, respectively, dependent upon the position of said clutch member, means for controlling the position of said clutch member by said pendulating feeler dependent upon the turned position thereof including a spring element acting to normally urge said clutch member into effective engagement with the clutch for driving said spindle and acting also to yieldingly control said pendulating feeler whereby the yarn in the stage engaging it will in the normal running thereof be tensioned thereby in an amount less than the tension of the yarn in the stage between said tension device and said pirn.

6. In a winding frame the combination comprising a winding spindle, a pirn on the winding spindle onto which the yarn is wound, a supply bobbin off which yarn is unwound to become wound on said pirn, a tension device through which the yarn passes preliminary to its winding on said pirn and by which the yarn is maintained to wind upon said pirn at a determinate tension, and mechanism controlling the yarn in its passage between said supply bobbin and said tension device including a pendulating yarn feeler having a part engaged by the yarn in its passage between the supply bobbin and said tension device and movable by change in the attendant tension of the yarn, means for yieldingly controlling said pendulating feeler whereby the yarn in the stage engaging it will in the normal running thereof be tensioned thereby in an amount less than the tension of the yarn in the stage between said tension device and said pirn, a driving means for said spindle including a clutch, a clutch for braking said spindle, a movable clutch member by which said clutches may be thrown on or off, respectively, dependent upon the position of said clutch member, and means for controlling the position of said clutch member by said pendulating feeler dependent upon the turned position thereof including a yielding element enabling the pendulating feeler to pendulate under increasing tension of the yarn after it has moved said clutch member to the limit of its movement for making clutch engagement for braking said spindle.

HANS TRECKMANN.
CARL-GEORG ROSENKRANZ.