Aug. 7, 1928. 1,679,542

G. PUCCI

AUTOMATIC REGISTER

Filed April 11, 1923 3 Sheets-Sheet 1

Fig. 1.

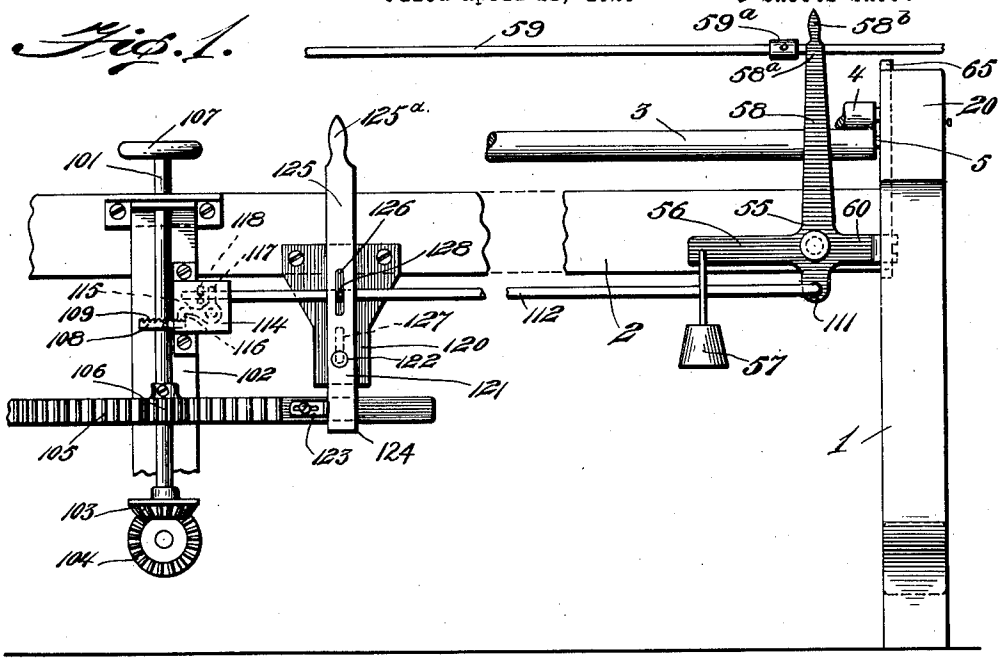
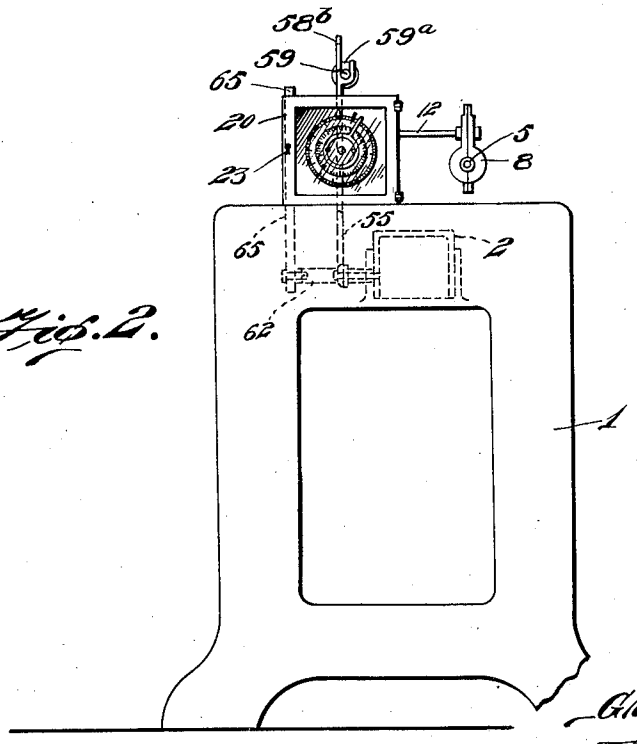


Fig. 2.



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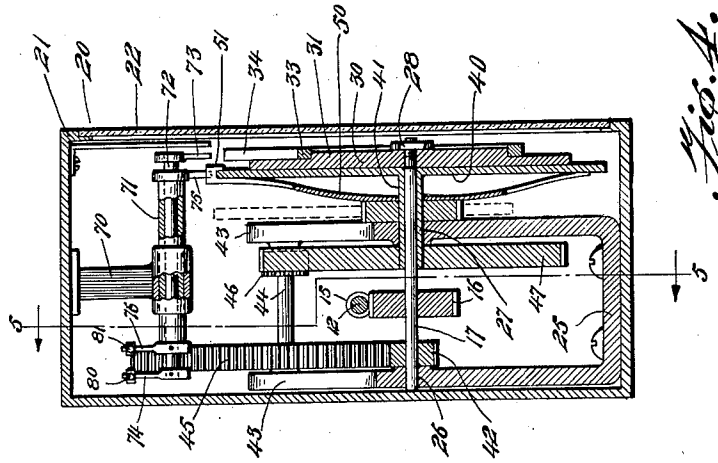


Fig. 4.

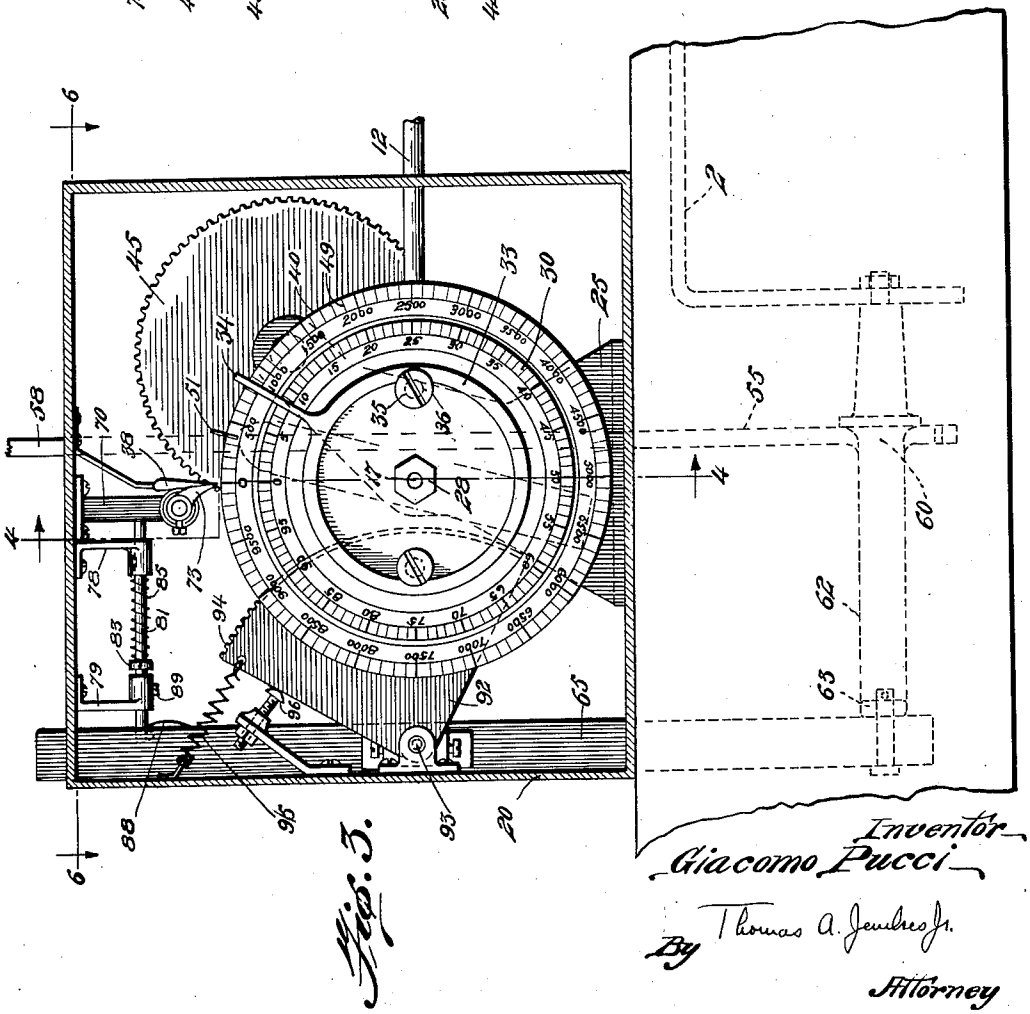


Fig. 5.

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AUTOMATIC REGISTER

Filed April 11, 1923 3 Sheets-Sheet 3

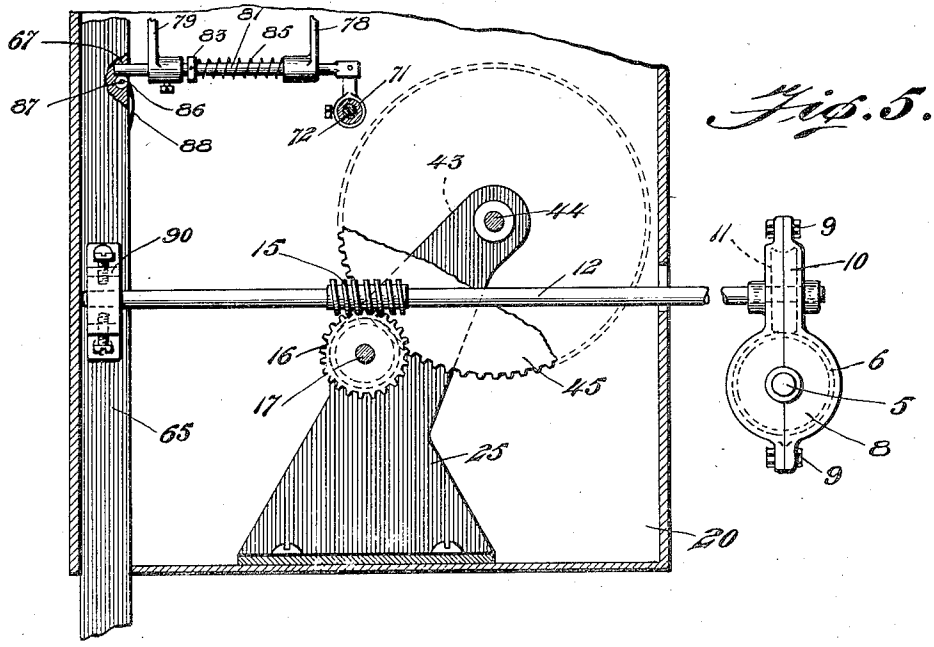


Fig. 5.

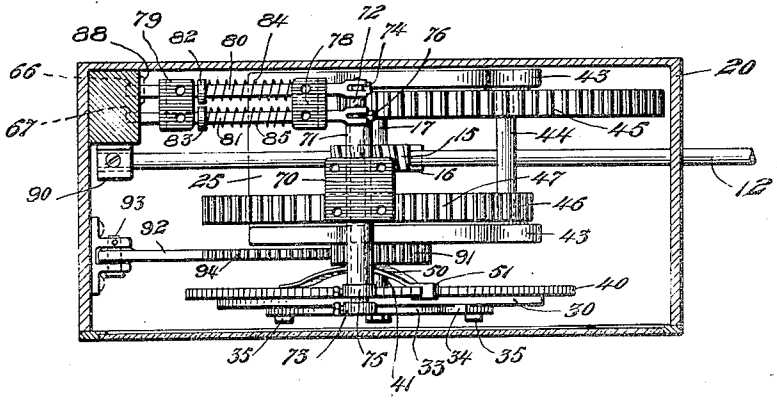


Fig. 6.

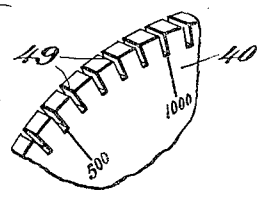


Fig. 7.

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Patented Aug. 7, 1928. 1,679,542

UNITED STATES PATENT OFFICE.

GIACOMO PUCCI, OF WESTERLY, RHODE ISLAND.

AUTOMATIC REGISTER.

Application filed April 11, 1923. Serial No. 631,436.

My invention relates to automatic registers, and automatic registers combined with stop motions or other mechanisms.

One object of my invention is to provide an improved register for measurement by roller contact therewith of the material treated.

A further object of my invention is to provide an improved type of combined register operative on roller contact and stop motion for machines of this general type. By setting the register at any desired pre-determined point, the stop motion is made to function at any pre-determined yardage length.

A further object of my invention is to provide an improved device of this general type, wherein the register contains two revolvable means for more accurately measuring the length of material acted upon, one of said means being an auxiliary revolvable means to more accurately measure fractional lengths thereof.

A further object of my invention is to provide an improved type of stop motion actuated by a projection which may be set at any desired pre-determined point on the revolvable means of said register.

A further object of my invention is to provide the combination in registers of this type of an automatic zero return mechanism operated upon automatically by other mechanisms at any desired point in their functioning. I am aware that zero return mechanisms are old in cash registers and similar devices, but these are not automatic in the same sense that my zero return mechanism is, as they require some other outside step such as pushing a key to permit of the functioning thereof.

A further object of my invention is to provide the combination in devices of this general type of means to instantly release the actuating means of the register to permit of the instant accurate functioning of the automatic zero return mechanism as desired.

A further object of my invention is to provide the combination in devices of this general type of a mechanism to instantly release the actuating means of the register when said mechanism is acted upon by other mechanisms.

A further object of my invention is to provide in a machine the combination of a register, a stop motion for said machine, an automatic zero return mechanism for said register, and means to release the actuating means of said register to permit of the instantaneous functioning of the automatic zero return mechanism on the stopping of the machine.

My invention is peculiarly adapted for textile machinery, especially textile spinning machinery, such as fly frames, spinning frames, etc., where the roving or yarn is drawn through draft rolls which themselves provide the roller measuring contact with the material acted upon. I am aware that formerly registers actuated in conjunction with draft or other measuring rolls have been devised. I am also aware that such devices have been equipped with stop motions actuated thereby to stop the machine. My invention not only forms a specific improvement on devices of this type by providing a new compact simplified operative mechanism, but by providing an automatic zero return mechanism for said register, in combination with means to instantly release the actuating means of said register on stopping of the machine. I render this general type of devices really practical for the first time in textile machinery. Machines of the type of fly frames, are operated to-day by the most unskilled class of help. It may have been realized that registers and combined registers and stop motions of this type are desirable in this general class of textile machinery. But as they have not been automatic, they have not been installed as they require more constant supervision to efficiently operate them than this unskilled class of help is capable of giving. There is also a great temptation on the part of this class of employees to play and tamper with the delicate parts thereof, and thus get them out of order. The delicate parts of my invention are carefully enclosed and locked in a glass case, where it is impossible to tamper with them after the machine has once been set. My invention permits the machine after it

has once been started to run until it automatically stops, the same length of roving being run through on all machines performing that particular step in the spinning process for the same size yarn. All the operative has to do is to piece up the broken ends in bobbins whenever they occur, he does not have to think, the machine does the rest. My invention thus increases the general efficiency of the machines by enabling them to be run more evenly.

My invention also makes possible a much greatly improved process of spinning. At present, fly frames are doffed to a gauge some frames making a bobbin with 25% more roving than others. My invention eliminates all of the uneven doffing, making a uniform bobbin on all machines performing the same step for the same weight of finished yarn in the cycle of spinning operations. By using my invention on one fly frame all bobbins are started empty, all are automatically stopped evenly, and as they are then full, they all may be simultaneously transferred to the next machine in the process, where this same operation is repeated and so on throughout the cycle of drawing and spinning operations. A tremendous saving of supervision is thereby effected. Having shown the said improved process of spinning, with a machine for effectively accomplishing this result for the first time, I broadly claim said process.

As stated, my device is peculiarly adapted for machines of the general type of fly frames. The unskilled help have been very apt to tamper with the rods on fly frames. By turning this rod during operation of the machine, to increase the speed of the bobbins, they produce better looking, more tightly bound bobbins. Unfortunately, however, this tight binding of the bobbins greatly weakens the yarn, and causes it to break more often in later processes. With my invention, an extension from the stop motion may be provided to lock the builder rod and permit tampering therewith until unlocked when the machine has run the desired length of roving on the bobbin. A further object of my invention is thus to provide improved means for locking the builder rods on fly frames during use, and the combination of said means with the other mechanisms mentioned above.

A further object of my invention is to provide a combined register, stop-motion and builder-rod locking mechanism which is automatically set and locked for use as the cone belt is turned back. These and such other objects of my invention as may hereinafter appear will be best understood from a description of one embodiment thereof applied to a fly frame such as is shown in the accompanying drawings.

In the drawings, Fig. 1 is a skeleton rear view of the end of a fly frame opposite from the driving end, showing parts of the stop motion and the builder rod locking extension.

Fig. 2 is a skeleton end view of the same end of the frame, showing my improved housed register mounted thereon.

Fig. 3 is an enlarged sectional view of the register box showing the operating mechanism in front elevation and adjacent parts of the stop motion.

Fig. 4 is a section taken along the lines 4—4 of Fig. 3.

Fig. 5 is a section taken along the lines 5—5 of Fig. 4.

Fig. 6 is a horizontal section of the register box along the line 6—6 of Fig. 3.

Fig. 7 is a fragmentary detail view of the outer edge of the large dial.

In the drawings, wherein like characters of reference indicate like parts throughout, 1 is the usual end support of a fly frame opposite from the driving end. 2 is the usual draft roll supporting U-beam having mounted thereon the usual bottom draft rolls 3, and the top draft rolls 4. The bottom draft rolls 3 are long continuous rolls extending the length of the machine, and are in roller contact with the roving passing between them and the top draft rolls 4. Revolutions of one of said rolls, preferably the front one, thus measure accurately the length of roving passing thereover. To mechanically transmit these measuring revolutions of the front lower draft roll 3 to the register, I employ the following mechanisms: I extend, if necessary, the end 5 of the lower front draft roll 3 (Fig. 1) and mount thereon the worm 6 (Fig. 5). For a purpose to be described later, I pivot thereon the split housing 8, locked in position by the bolts 9, said housing having an extension 10, adapted to receive and support a worm gear 11, mounted on a cross driving shaft 12, in mesh with the worm 6 on the end of front draft roll shaft 3. On said driving shaft 12 I secure the worm 15 adapted to enmesh a worm gear 16 on the register shaft 17.

The register box 20, may be conveniently mounted on the top of the frame and support 1. I choose the frame end support 1 away from the driving end, as this frame end support is lower than the driving end frame end support, and thus more suited for mounting the register box 20 thereon in more convenient relation to the other mechanism to be described. I provide the register box 20 with the front cover 21 suitably hinged thereon, said cover being provided with the glass front 22, to render visible the register therethrough, and the lock 23 for locking it to the box 20. Suitably attached to the bottom of said box near the rear end thereof is the U-shaped register mechanism supporting frame 25. The register shaft 17 is suitably mount-

ed in bearings 26 and 27 therein, as shown in Fig. 4. Secured on the shouldered front end of the register shaft 17 by the nut 28, is the small dial 30. Said small dial 30 is graduated as desired and provided with figures indicative of said graduations (Fig. 3), and on the front thereof is provided with a raised hub portion 31. A ring 33, provided with the hand 34 projecting integrally therefrom beyond the outer periphery of the large dial 40 for a purpose to be explained later, is adapted to encircle said hub portion 31.

The screws 35 are adapted to be screwed into threaded holes in the front face of the hub portion 31, the heads 36 of said screws retaining said ring 33, and hence the hand 34 projecting integrally therefrom in any pre-determined setting on the small dial 30. The register is also provided with the zero indicating finger 38 mounted firmly on the register box 20, so as not to revolve. We thus see that the small dial 30 is driven directly by the cross driving shaft 12, and is provided with the projecting hand 34 which may be set at any point on the graduated scale thereof. To more accurately measure long lengths of material, I provide in addition the large dial 40. The large dial 40 is mounted on or integral with a sleeve 41, which envelopes the register shaft 17 for a short distance thereof, said sleeve 41 and enclosed shaft 17 being mounted in the front bearing 27 of the register mechanism supporting frame 25. To reduce the comparative speed of the large dial 40, I provide the reducing train of gearing about to be described. Near the rear bearing 26 of the register mechanism supporting frame 25, I secure the pinion 42 on the register shaft 17. I provide both arms of the U-shaped register mechanism supporting frame 25 with the lateral upwardly extending projections 43, and mount in bearings therein the reducing gear shaft 44. On the rear of said shaft I mount the reducing gear 45, which is thus placed in mesh with the pinion 42. On the front end of the shaft 44 I mount the pinion 46, which is placed in mesh with the reducing gear 47 secured to the sleeve 41 on which is mounted the large dial 40. In this manner is the large dial 40 driven at a much reduced comparative speed to that of the small dial 30. The outer periphery of the large dial 40, is provided with a series of evenly graduated radial notches 49 slit therein (Fig. 7), and the outer front surface thereof, as well as the outer front surface of the small dial may be provided with suitable figures to designate the desired graduations. Mounted on said sleeve 41, in rear of the large dial 40, is the spring member 50, the outer end of which is provided with a knife blade 51, the outer end of which projects beyond the outer periphery of the large dial 40 for a purpose to be explained later. The knife blade 51 is adapted to be inserted in any desired predetermined graduated notch 49 in the large dial 40, and as it is integral with the spring member 50, it may be readily reset in any desired notch 49.

Suitably pivoted to the U-beam 2 of the fly frame at a point relatively near the frame and support 1, is the stop motion lever 55. This is provided with the weight arm 56 on which is hung the weight 57, the power arm 60, and the upward extension 58 provided with a channel 58^a in the upper end thereof, adapted to receive the shipper rod 59 and to act against a collar 59^a secured to said shipper rod 59, to shift it to stop the machine when the lever 55 is released. Any convenient means may be employed which may be tripped by the registering means of the register to actuate the stop motion lever 55. I will now describe the preferred embodiment of said means. The power arm 60 may be bent around and led to a position adjacent the register, and this is preferably done as follows: (Fig. 3); It projects longitudinally of the machine a short distance, is bent at right angles to itself and projects transversely of the frame end support 1, as at 62, and then again bent at right angles to itself projects longitudinally of the machine for a very short distance as at 63. The projection 63 has pivotally attached thereto the stop motion releasing power arm extension bar 65, which projects vertically up through the register box 20, and is free to slide vertically therein. The power arm extension bar 65 has the holes 66 and 67 cut transversely therein. I mount the supporting bracket 70 on the under surface of the top of the register box 20. Said bracket 70 is adapted to support a revoluble sleeve 71 and freely revoluble therein the shaft 72. The shaft 72 has mounted at the front end thereof the downwardly projecting finger 73, and at the rear end thereof the upwardly projecting finger 74. The sleeve 71 has mounted at the front end thereof the downwardly projecting finger 75, and at the rear end thereof the upwardly projecting finger 76. The under surface of the top cover of the register box 20, has also mounted thereon the additional supporting brackets 78 and 79, adapted to receive in parallel bearings therein the small locking shafts 80 and 81 movable longitudinally thereof. The locking shafts 80 and 81 are provided with adjustable collars 82 and 83, to regulate the pressure of the springs 84 and 85 coiled therearound, respectively. The inner ends of said shafts are attached to the upwardly projecting fingers 74 and 76 of the shaft 72 and sleeve 71, respectively, and the outer ends thereof are adapted to register respectively in the holes 66 and 67 in the stop motion releasing bar 65. The holes 66 and 67 are placed horizontally of the power arm

extension bar 65. To facilitate the functioning of the locking shafts 80 and 81 in and out of the holes 66 and 67, I mount in power arm extension bar 65 back of the holes 66 and 67, the roller bearings 86 journaled on the transverse pin 87 for the functioning thereon of the ends of the locking shafts 80 and 81, respectively. Below the hole 66 is placed the raised projection 88 for a purpose to be described later.

The operation of my improved combined stop motion and register is obvious from the above description. The projecting hand 34 is set at the desired predetermined setting on the small dial 30, and the projecting end of the knife blade 51 is set in the desired predetermined notch on the large dial 40. Starting the machine, however, only shifts the lever extension 58 slightly and not enough to lock the register. As in doffing it is necessary to start and stop the machine, it is obvious that there can be no direct connection between the shipper rod 59 and the register locking mechanism. To further shift over the lever extension 58 to lock the register, I provide the handle 58^b on the upper extremity thereof. On pushing the lever extension 58 over further, the power arm extension bar 65 of the lever 55, will be raised until the locking shafts 80 and 81, pushed over by the springs 85 and 86 respectively, register in the holes 66 and 67. It is obvious that this registration of the locking shafts 80 and 81 in the holes 66 and 67, prevents the re-setting of the register until the machine is automatically stopped as follows; the weight 57 always tends to pull down the lever 55 to operate the shipper rod to stop the machine. The raising up of the power arm extension bar 65 is prevented, however, by the aforementioned locking of the shafts 80 and 81 therein. It is obvious, however, that if both the shafts 80 and 81 are withdrawn from their respective holes in the power arm extension 65 at once, that the weight 57 will function to shift the shipper rod 59 and stop the machine. On each revolution of the small dial 30, the projecting hand 34 will strike against the downwardly projecting finger 73 which operates the locking shaft 80, as explained. Thus on each revolution of the small dial 30 is the cross shaft 80 temporarily withdrawn from the hole 66. As the hand 34 continues on its revolution, it is obvious that the spring 85 will force the shaft 80 back in its hole 66. This operation is continuously repeated each revolution of the small dial 30. It is also obvious that when the projecting end of the knife blade 51 strikes the downwardly projecting finger 75 which operates the cross shaft 81 as explained, the locking shaft 81 will be withdrawn from its hole 67 in the power arm extension bar 65. Thus when the large dial 40 has turned the desired amount, it is obvious that the projecting end of the knife blade 51 will operate to retain the locking shaft 81 out of registration with the hole 67 for the desired period of time. It is also obvious that the small dial 30 with its projecting hand 34, will continue to revolve and that at some period in the next revolution thereof will operate to withdraw the locking shaft 80 out of registration with its hole 66. We thus see that at this moment of joint release of registration of both locking shafts 80 and 81, from their holes 66 and 67 in the power arm extension 65, the weight 57 will be free to operate to actuate the lever 55 to shift the shipper rod 59 and stop the machine. The locking shafts 80 and 81 may be provided with the locking screws 89. These operate to cut out the functioning of either dial as desired. It is obvious that if for instance the locking shaft 80 is pulled out of the path of the power arm extension 65 and the locking screw 89 thereof tightened, that the downwardly projecting finger 73 of the connected shaft 72 will be moved out of the path of the hand 34 revolving with the small dial 30.

Though I have described and specifically disclosed an improved type of register, provided with two dials to more accurately measure the material treated, it is obvious that to operate the afore described improved stop motion, and that for the combination features of my invention now to be explained, that a single dial register containing a projection therefrom of the registering means thereof, to actuate a stop motion or other mechanism at the desired predetermined point of the revolution thereof, may be employed. As stated, registers of this general type are old, as are registers that actuate stop motions. My invention in this respect merely embodies specific improvements on these devices.

The specific means that I am about to describe, however, are new in all types of registers or combined registers and other mechanisms, whether stop motions or otherwise. The means I will first describe may be termed means actuated by said stop motion or other mechanism to disengage the register actuating mechanism on stopping of the machine or otherwise to permit the functioning of other mechanisms. I will now describe the embodiment of this means shown. As stated, the cross drive shaft 12 is pivotally mounted on and threadedly engaged with the end 5 of the lower front draft roll shaft 3. On the stop motion releasing bar 65, I mount the bearing 90 adjustable vertically thereof, adapted to receive therein the end of the cross driving shaft 12. It is obvious that on the functioning of the stop motion, and raising of the stop motion releasing bar 65, that the worm 15 on the shaft 12 will be raised out

of engagement with the worm gear 16 of the register shaft 17, the housing 6 pivoting sufficiently around the end of the lower front draft roll shaft 3 to permit of said movement, thus freeing the register for the actuation thereon, if desired, of any other desired mechanism. It is also obvious that when the machine is started and the stop motion releasing bar 65 lowered, that the worm 15 on the cross drive shaft 12 will again be placed in mesh with the worm gear 16 on the register shaft 17 to actuate the register.

In addition, I provide, I believe for the first time in registers or in registers combined with other mechanisms, stop motions or otherwise, an automatic zero return mechanism which I will now describe. Secured to the sleeve 41 on the register shaft 17 is the gear 91. A quadrant 92 is pivotally mounted at 93 on one side of the register box 20, said quadrant being provided with the teeth 94 to mesh with the teeth on said gear 91. I also provide a spring 95 mounted on another part of the same side of the register box 20, and attached to said quadrant 92 to return said quadrant to its original position when released, and an adjustable stop 96 also mounted on the same side of the register box 20, to adjustably limit the return movement of said quadrant. It is obvious that said zero return mechanism may function whenever the register actuating mechanism is dis-engaged, and that it will function similarly on a one or two dial register. The operation of said mechanism is obvious from the previous description. As the dials revolve, the gear 91 attached thereto will effect a turning of the quadrant 92 against the tension of the spring 95. However, when the register actuating mechanism is dis-engaged and we have seen that this is effected in the embodiment shown, immediately on the stopping of the machine, the spring 95 will cause a return movement of the quadrant 92 until it is arrested by the adjustable stop 96, the gearing described above operating to return the registering means of the register to zero. As the quadrant acts on a train of gearing, dials, etc., it is obvious that said movement will be braked thereby to effect an even return to zero of said dials. The stop 96 may be re-adjusted for accurate zero settings thereon whenever found necessary. During the turning back of the small dial 30 by the zero return mechanism, it is obvious that the downwardly projecting fingers 73 of the shaft 72 must be kept out of the path of the hand 34 revolving with the small dial 30. For this purpose, I have provided on the power arm extension bar 65, directly underneath the hole 66 the projection 88. This projection 88 is so placed that when the power arm extension bar 65 is raised the shaft 80 will strike this projection, and thus raise the finger 73 out of the path of the hand 34. Though I have shown my zero return mechanism in combination with means to dis-engage the register actuating mechanism, it is obvious, that such mechanism is not essential to the proper working thereof, and that my zero return mechanism may properly function with other combinations.

As stated previously, the above described invention is peculiarly adapted for textile machinery, especially fly frames. In fly frames it is desirable in order to prevent tampering with the builder rods thereof by the unskilled help when the machine is running, to provide some means of locking them during use. As my invention provides a means for locking the register in use, and only permits the re-setting thereof after the automatic stopping of the machine at predetermined lengths, it provides admirable means for an attachment to lock the builder rod to prevent unauthorized tampering therewith during use, and only to permit of the desired automatic turning thereof by the other parts of the builder mechanism. The builder rod 101 is suitably mounted on the U-beam 2 as usual. The builder rod 101 is driven as usual by the driven gear 103 keyed thereto. The driving gear 104 in mesh therewith connected to the other parts of the builder mechanism (not shown), drives as usual the cone belt rack bar 105 by means of the usual pinion 106 secured thereto. The builder rod 101 is provided with the usual hand wheel 107 to wind back the cone belt after doffing and for the proper adjustment thereof. I mount on the builder rod 101, the gear 108 provided with the ratchet teeth 109 on its upper face. To an extension 111 of the stop motion lever 55, I attach the connecting rod 112. In a housing 114 mounted on the supporting bar 102, I pivot a pawl 115 which contains the usual tooth 116 for registering with the ratchet teeth 109 and an operating arm 117, through which extends the connecting rod 112. Said operating arm 117 is adapted to contact an adjustable collar 118 mounted on the connecting rod 112. When the shipper rod 59 is moved to the position to stop the machine, the rod 112 connected to the lever 55 will operate to lift up the pawl 115, thus permitting free turning of the builder rod 101. As explained, shifting the shipper rod 59 to start the machine, does not operate to lock the register and the builder rod locking mechanism. The reason for this construction is that during doffing and at other times it is necessary to start and stop the machine independently of the register mechanism. The register may be locked in two ways by manually pushing the handle 58 over further as explained, or automatically by the turning back of the cone belt in a manner to be de-

scribed. When the register is locked, the connecting rod 112 connected to the lever 55 will be moved over to permit the registration of the tooth 116 of the pawl 115 on the ratchet teeth 109. It is obvious that this will prevent the manual turning of the builder rod 101 to permit of tightening thereof, but will permit the tooth 116 of the pawl 115 to slide over the ratchet teeth 109 to permit the regular mechanical turning thereof by the other parts of the builder mechanism, and that this locking thereof will continue during the entire run of a set of bobbins, even if the machine is started or stopped in the meanwhile, until the machine automatically stops at the desired predetermined setting by the functioning of the combined automatic register and stop motion. Thus we have the builder rod 101 locked during a run of the bobbins by the same mechanical combination of elements which comprise the combined register and stop motion.

In addition, I provide means to automatically lock the register on the turning back of the cone belt. The frame is doffed, a new set of bobbins is placed on the frame, and turning back of the cone belt is usually the last operation before again starting the frame. Turning the hand wheel 107 turns the builder rod 101 which by means of the pinion 106 draws out the cone belt rack bar 105 pulling out the cone belt to the fast motion end of the cones (not shown). To the bracket 120 depending from the U-beam 2, I pivotally attach a lever 121 by means of the pivot bolt 122. I provide an adjustable projection 123 on the rack bar 105 to act against the depending arm 124 of said lever. The upwardly projecting arm 125 of said lever is provided with a vertical slot 126, into which projects a pin 128 extending horizontally from the connecting rod 112. The upper end of the arm 125 may also be provided with the handle 125a. The bracket 120 is also provided with the vertical slot 127. By varying the position of the pivot bolt 122 in said slot, it is obvious that the throw of the upper arm 125 of said lever may be adjustably varied. It is apparent that when the cone belt rack 105 is turned back as explained that the projection 123 adjustably attached to the inner end of the rack bar 105 will strike against the depending arm 124 of the lever 121 and will throw over the upper arm 125 pulling over the connecting rod 112 to operate the lever 55 to lock the register by further pulling down the extension bar 65, so that the shafts 80 and 81 may be locked therein, as explained.

The operation of my invention is obvious from the above description. The dial or dials are set at the desired pre-determined settings, the machine is started, the builder rod is locked by the same mechanism that prevents an unauthorized final stopping of the machine until it is stopped automatically when the desired, pre-determined amount of material has been run through. When the pre-determined amount of material has been run through, as permitted by the pre-determined setting of the combined registering and tripping means, the tripping means functions to actuate the stop motion or other desired mechanism, which when released automatically operates to disengage the register actuating mechanism, which permits of the functioning of the automatic zero return mechanism, which returns the dials to zero ready to begin again. When the machine is automatically stopped, the builder rod 101 is free to be reset as desired. To repeat this cycle of operation, it is merely necessary to doff, lock the register, and the machine will automatically repeat the said cycle. It is only necessary to open the register box 20 to reset the dials when it is desired to change the total amount of material run through on each cycle. Thus the attachment will permit of repeated cycles of operation without resetting or re-adjustment. It is also obvious that the automatic operation of the machine in turning out bobbins all wound with the same length of roving permit of their simultaneous transfer to the next machine in the drawing or spinning series whereon said operations are repeated, and that my improved device renders this type of registers and combined registers and stop motions really practical for the first time in textile machines, and that a tremendous saving in cost of supervision and handling of roving is effected.

It is understood that the invention is not limited to the specific embodiment shown, and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What I claim as new and desire to procure as Letters Patent is:—

1. In fly frames, the combination of a revolvable register to measure the length of the material acted upon, means to actuate the same in roller contact with said material, a stop motion mechanism for the machine, means adjustably set at predetermined points on said register to actuate the stop motion mechanism at predetermined material length settings, and means attached to said stop motion mechanism for locking the builder rod at the desired setting thereof to prevent readjustment thereof during the filling of the bobbins.

2. In fly frames, the combination of a register, mechanism to actuate the same, a stop motion mechanism, means adjustably set at predetermined points on said register to actuate said stop motion mechanism, means automatically actuated by said stop motion mechanism to disengage the register actuating mechanism, and means attached to

said stop motion mechanism for locking the builder rod at the desired setting thereof to prevent readjustment thereof during the filling of the bobbins.

3. In fly frames, the combination of a register, mechanism to actuate the same, a stop motion mechanism, means adjustably set at predetermined points of said register to actuate said stop motion mechanism, an automatic zero return mechanism for said register, means automatically actuated by said stop motion mechanism to disengage the register actuating mechanism to permit the functioning of the zero return mechanism, and means attached to said stop motion mechanism for locking the builder rod at the desired setting thereof to prevent readjustment thereof during the filling of the bobbins.

4. In fly frames, the combination of a revolvable register to measure the length of the material acted upon, means to actuate the same in roller contact with said material, a stop motion mechanism for the machine, means adjustably set at predetermined points on said register to actuate the stop motion mechanism at predetermined material length settings, and means attached to said stop motion mechanism for locking the builder rod at the desired setting thereof to prevent readjustment thereof during the filling of the bobbins, and means actuated by the shifting of the cone belt of the builder mechanism to lock the register.

5. In fly frames, the combination of a register, mechanism to actuate the same, a stop motion mechanism, means adjustably set at predetermined points on said register to actuate said stop motion mechanism, means automatically actuated by said stop motion mechanism to disengage the register actuating mechanism, and means attached to said stop motion mechanism for locking the builder rod at the desired setting thereof to prevent readjustment thereof during the filling of the bobbins, and means actuated by the shifting of the cone belt of the builder mechanism to lock the register.

6. In fly frames, the combination of a register, mechanism to actuate the same, a stop motion mechanism, means adjustably set at predetermined points of said register to actuate said stop motion mechanism, an automatic zero return mechanism for said register, means automatically actuated by said stop motion mechanism to disengage the register actuating mechanism to permit the functioning of the zero return mechanism, and means attached to said stop motion mechanism for locking the builder rod at the desired setting thereof to prevent readjustment thereof during the filling of the bobbins, and means actuated by the shifting of the cone belt of the builder mechanism to lock the register.

7. A builder motion locking device for fly frames, comprising an upwardly threaded ratchet gear mounted on the builder rod and revolvable therewith, a pawl to co-operate with said ratchet controlled in its action by the stop motion mechanism, said stop motion mechanism being only actionable automatically on predetermined yardage settings of a register, a housing for said pawl and the co-operating sector of said ratchet gear, the pawl co-operating with the ratchet gear to permit the automatic turning thereof by the builder mechanism, but to prevent manual tightening of the builder rod during the filling of the bobbins.

8. In a fly frame, the combination of a register, mechanism to actuate said register, a stop motion mechanism for the machine, comprising a lever mounted on the machine, a weight attached to one arm thereof, a power arm therefor, and means adjustably set at predetermined points on said register to trip the power arm of said lever at predetermined material length settings of said register to shift the shipper rod, a rod extending from said lever to the builder rod, an upwardly threaded ratchet gear mounted on the builder rod and revolvable therewith, a housing for the end of said connecting rod and a sector of said gear, a pawl pivoted on the end of said connecting rod adapted to mesh with said ratchet gear to co-operate with said ratchet gear to permit the automatic movements of the builder mechanism, but to prevent manual tightening of the builder rod during the filling of the bobins.

9. The claim according to claim 8, and a gear on the builder rod, a builder mechanism cone-belt shifting rack in mesh with said gear, and means operated by the shifting of said rack on turning back the cone belt to automatically shift the lever connecting rod to move the lever sufficiently to lock the register.

10. The claim according to claim 8, and a gear on the builder rod, a builder mechanism cone belt shifting rack in mesh with said gear, a lever mounted on the fly frame support, the upper arm thereof attached to the lever connecting rod, the lower arm thereof projecting downwardly, a projecting lug attached to the cone belt shifting rack adapted to engage the lower arm of said lever to automatically shift said stop motion lever sufficiently to lock the register on the turning back of the cone belt.

In testimony whereof I affix my signature.

GIACOMO PUCCI.