No. 690,634. Patented Jan. 7, 1902.

L. W. CAMPBELL.

SPINNING OR TWISTING MACHINE.

(Application filed May 9, 1901.)

(No Model.)

FIG. 1.

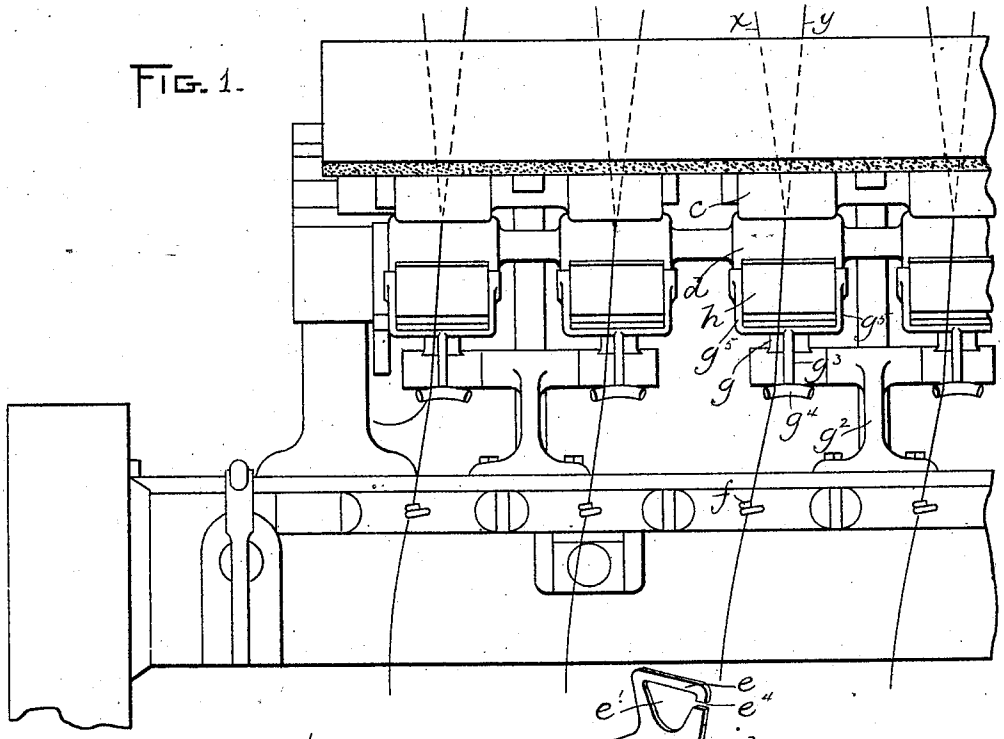


FIG. 3.

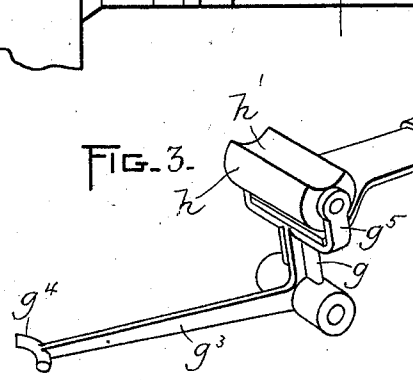


FIG. 2.

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UNITED STATES PATENT OFFICE.

LEON W. CAMPBELL, OF WOONSOCKET, RHODE ISLAND.

SPINNING OR TWISTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 690,634, dated January 7, 1902.

Application filed May 9, 1901. Serial No. 59,444. (No model.)

To all whom it may concern:

Be it known that I, LEON W. CAMPBELL, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Spinning or Twisting Machines, of which the following is a specification.

This invention has relation to spinning or twisting frames, and has for its primary object the provision of means for decreasing and in a large measure preventing the waste of yarn that has hitherto been due to the breaking of the ends and the wrapping or coiling of the latter about the rolls. Heretofore in machines of this character means have been employed which act by gravitation when a roving breaks to cause a clamp adjacent to that roving to engage the same and cause its breakage at the receiving side of the rolls, the said means being necessarily delicate and complicated and liable to derangement. My invention is intended to utilize the power that rotates the drawing-rolls to continuously grasp and hold the roving, and thus directly cause the second breakage of a broken roving at the receiving side of the rolls, thus enabling the desired result to be produced with greater certainty and by more simple and reliable means than have been heretofore used.

The invention consists in the improvements which I will now proceed to describe and claim.

Referring to the accompanying drawings, which illustrate one embodiment of my invention, Figure 1 represents in front elevation the upper portion of a spinning or twisting frame. Fig. 2 represents a section through the same from front to rear. Fig. 3 represents a perspective view of a device embodying my invention.

Referring to the drawings, a portion of the spinning-frame is shown, which differs in no respect in its essential features from those ordinarily employed. Three sets of drawing-rolls are used, as is ordinarily the case, (indicated at $a\,a$, $b\,b$, and $c\,d$.) The top rolls are mounted in the usual manner in operative relation to the lower rolls, that at c being preferably shod with leather or other suitable material and that at d being formed of steel and being fluted in the usual way. The strands x and y come from reels and pass through the thread-eye t to the rolls. Thence they extend to the "pigtail" or thread-eye f. In the rear of the rolls there is a rod g, which is usually employed in machines of this character.

My invention in the embodiment here shown comprises a fixed clamp member, which is provided by forming a slot d' in a fixed rod or bar d^2, the intersection of the upper edges of the walls of the slot with the upper portion of the periphery of the bar forming shoulders which coöperate with the movable clamp member e (next described) in grasping a roving at a point near the receiving side of the drawing-rolls. The movable clamp member e is formed by cutting an aperture e' in a shank e^2, which is bent below said aperture, the upstanding part of the shank being formed to enter the slot d' and move up and down therein, so that the member e can stand above the bar d or can be drawn down into the same. The roving passes through the orifice e' and is admitted thereto through an eye or slot e^4. When the member e is above the bar, the roving passes freely between the clamp members, and when the member e is depressed the roving is grasped and held, so that the rotation of the rolls breaks the roving between the clamp and the rolls. The shank e^2 is secured to an arm g, which is pivoted at g' and is provided with a finger g^3, the outer end of which is formed at g^4 to engage a normal or unbroken roving r at a point between the delivering side of the drawing-rolls and the thread-eye f.

h represents an idle roll, which is journaled in ears g^5 on the arm g and has a longitudinal recess h' in its periphery, said recess causing one side of the roll h to overbalance the other, so that the roll normally occupies the position shown in Fig. 3 and by full lines in Fig. 2. The parts are so weighted that they normally move toward the position shown by dotted lines in Fig. 2, but are restrained from so moving and held in the full-line position by the normal roving r, the idle roll h being held with its periphery in close proximity to the periphery of the fluted roll d, but just out of contact therewith. The idle roll h and the fluted roll d constitute the members of a couple of rotation, the member h being a gravitating member.

In case the roving breaks between the front

drawing-rolls and the thread-eye *f* the gravitating movement of the parts brings the idle roll *h* into contact with the fluted roll *d*, whereupon the roll *h* is rotated by contact with the roll *d*. This rotation brings the angle on the roll *h* at one side of the recess *h'* into engagement with two of the corrugations of the fluted roll *d* and causes the latter to positively rotate the roll *h* until the recess *h'* lies against the periphery of the roll *d*, as shown in dotted lines. The positive movement thus imparted to the roll *h* aids the force of gravitation in depressing the clamp member *e* and causes the clamp members to firmly grasp and hold the roving and insure its second breakage, thus stopping further delivery of the broken roving until it has been restored to its normal condition. I therefore utilize conjointly the force of gravitation and the power that rotates the drawing-rolls in effecting the second breakage of the roving.

I do not limit myself to the details of mechanism herein shown and described and may variously modify the same without departing from the spirit of my invention.

I believe myself to be the first to combine with the drawing-rolls of a spinning or twisting machine a roving-clamp adjacent to the receiving side of the rolls and clamp-closing means normally held inoperative by a normal or unbroken roving, said means comprising a gravitating member of a couple of rotation, the other member of which is one of said drawing-rolls, and connections between said gravitating member and the clamp whereby upon the breakage of a roving at the delivery side of the rolls the clamp is closed by the conjoint action of gavitation and of the power that rotates the rolls and caused to continuously hold the roving, so that the roving is broken at the receiving side of the rolls, its broken end remaining in the nip of the first pair of rolls ready for reëngagement with said rolls when the clamp is opened by the attendant.

In my application for Letters Patent of the United States for improvements in spinning or twisting frames, Serial No. 59,443, filed concurrently with this application, I show a differently-organized mechanism for accomplishing the same result. I regard the mechanism of said application Serial No. 59,443 as within the scope of the first claim of this application.

It will be seen that after the clamp has been closed on the roving it remains continuously closed until opened by the attendant, so that time is afforded for the breakage of the roving by the continued rotation of the drawing-rolls, the loose filaments of the broken end of the roving remaining in such relation to the nip of the first pair of rolls that when the clamp is opened the rolls grasp the said filaments and resume the drawing operation without further attention by the attendant.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. In a spinning or twisting machine, the combination with the drawing-rolls of a roving-clamp adjacent to the receiving side of the rolls, and clamp-closing means normally held inoperative by a normal or unbroken roving, said means comprising a gravitating member of a couple of rotation, the other member of which is one of said drawing-rolls, and connections between said gravitating member and the clamp, whereby upon the breakage of a roving at the delivering side of the rolls the clamp is closed by the conjoint action of gravitation and of the power that rotates the rolls, and caused to continuously hold the roving so that the roving is broken at the receiving side of the rolls, its broken end remaining in the nip of the first pair of rolls, ready for rëengagement with said rolls when the clamp is opened by the attendant.

2. In a spinning or twisting machine, the combination with the drawing-rolls, of a roving-clamp adjacent to the receiving side of the rolls, one of the members of said clamp being movable, a pivoted arm supporting said movable clamp member and mounted to swing toward and from the fluted lower roll, an idle roll journaled in bearings on said arm and having a recess adapted to fit a portion of the periphery of the fluted roll, said arm and idle roll being normally pressed toward the fluted roll, and toward the position required to cause the movable clamp member to engage the roving, and a finger attached to the arm and arranged to be held by a normal or unbroken thread at the delivering side of the rolls in position to hold the arm and idle roll away from the fluted roll and the movable clamp member out of engagement with the roving, the breakage of the roving at the delivery side of the rolls releasing the arm and causing the idle roll to engage the fluted roll and rotate therewith until the recess in the idle roll bears upon the periphery of the fluted roll.

In testimony whereof I have affixed my signature in presence of two witnesses.

LEON W. CAMPBELL.

Witnesses:
MALCOLM CAMPBELL,
C. F. BROWN.