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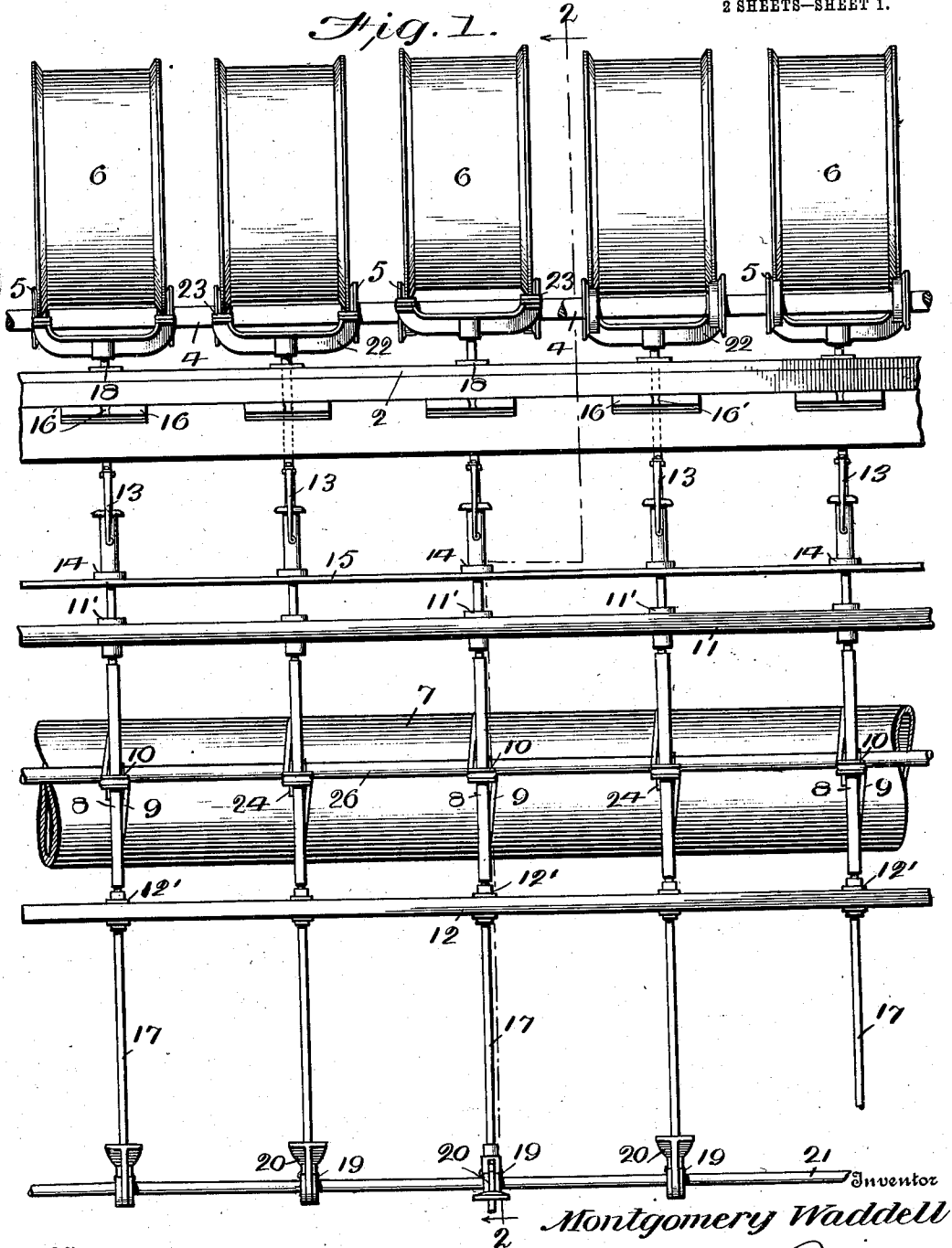
M. WADDELL.

MACHINE FOR TWISTING TOGETHER THE FILAMENTS OF A THREAD
OF ARTIFICIAL SILK.

APPLICATION FILED FEB. 23, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

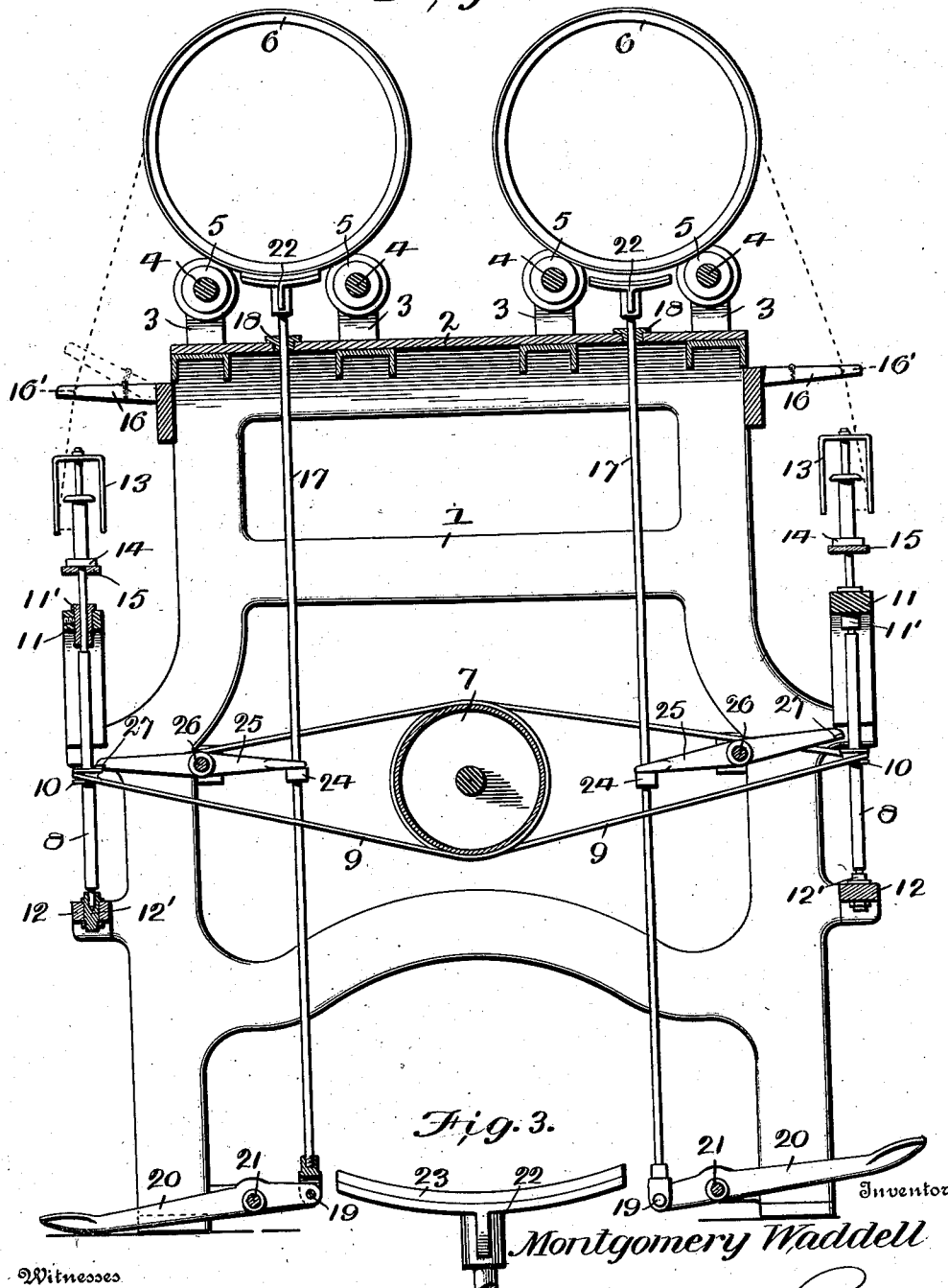


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

MONTGOMERY WADDELL, OF NEW YORK, N. Y., ASSIGNOR TO SILAS W. PETTIT, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR TWISTING TOGETHER THE FILAMENTS OF A THREAD OF ARTIFICIAL SILK.

No. 867,623.

Specification of Letters Patent.

Patented Oct. 8, 1907.

Application filed February 23, 1906. Serial No. 302,387.

To all whom it may concern:

Be it known that I, MONTGOMERY WADDELL, a subject of the King of Great Britain, and a resident of New York, county and State of New York, United States of America, have invented certain new and useful Improvements in Machines for Twisting Together the Filaments of a Thread of Artificial Silk or Similar Material, of which the following is a full, clear, and exact description.

My invention relates to machines upon which threads composed of a plurality of untwisted and substantially parallel filaments of artificial silk, or like material, are spun or twisted together to form a twisted thread. In this class of machines it is desirable to deliver the untwisted threads to the twisting mechanism, directly from the bodies upon which the filaments are wound when they emerge from the coagulating or fixing bath, and upon which they are treated during the various steps of the process of forming the same prior to that of spinning.

One of the objects of the present invention is to provide a machine upon which a thread of artificial silk or similar material may be twisted directly or spun from the bodies upon which they were originally wound.

A further object of my invention is to provide a means for positively rotating said bodies in order to deliver the untwisted threads wound thereupon to the twisting mechanism.

A further object of my invention is to provide a machine of the character above referred to, with a means for simultaneously stopping the rotation of the said bodies and of the twisting spindle or flier whenever it is necessary to interrupt the twisting operation, as for instance, upon the breaking of one or more filaments.

Further objects of my invention will appear in the accompanying specification and claims.

In the drawings, forming a part of this specification, Figure 1 is a front elevational view of a portion of a spinning-frame embodying my invention; Fig. 2 is a transverse sectional view of my improved machine, the section being taken on the line 2-2 of Fig. 1; Fig. 3 is an enlarged view of one of the details of my invention.

1 indicates a suitable frame or support of a spinning machine, on the top 2 of which, supported in suitable boxes 3 are pairs of shafts 4-4, parallel to each other, and running lengthwise of the machine. Each pair of shafts 4-4 is provided with series of similarly arranged rollers 5-5, which are adapted to support between them the flanged rings 6, upon which the thread composed of the untwisted and

substantially parallel filaments is wound. The shafts 4-4 carrying the rollers 5-5 are positively rotated in the same direction by any suitable means, and by their rotation impart a rotary motion to the flanged rings 6 supported thereon. These flanged rings 6 are the bodies upon which the untwisted filaments are wound as they are formed in the fixing bath, and upon which they are subjected to the subsequent steps of the process of making artificial silk or similar material prior to the step of twisting the filaments together. Within the frame 1 of the twisting machine is the usual drum or "tin roller" 7, by which the spindles 8-8, arranged in series along each side of the frame 1, are revolved through the belts 9 and whirls 10 mounted on the spindle. The spindles 8 are supported in suitable rails 11, 12, the upper of which 11 is provided with a suitable bearing bushing 11', and the lower of which is provided with a suitable step bearing 12'. The upper end of each spindle carries a flier 13, and loosely mounted upon the spindle are bobbins 14 upon which the thread is wound, as it is twisted.

15 indicates the builder rail, which is given, by any suitable mechanism, a reciprocatory motion parallel to the spindle and to the bobbins 14 carried thereon, to wind the thread in regular courses upon the bobbins.

16 indicates the thread board through the guide eye 16' in which the thread passes, as it is delivered from the flanged ring 6 to the end of the flier 13. I prefer, however, to make the eye 16' in the thread board of such a size as will permit the twist imparted to the thread by the rotation of the flier to extend upward through the thread board to the point of delivery of the thread from the surface of the ring in order to catch and bind in to the twisted thread any broken filament which otherwise would wind up and accumulate on the ring and eventually break the thread.

17 indicates a rod, the upper end of which is mounted in a bushing 18 in the top 2 of the frame, and the lower end of which is pivoted at 19 to a foot lever 20, which, in turn, is pivoted on a shaft 21, secured to and extending lengthwise of the frame 1. The upper end of the rod 17 carries a yoke 22, the upper ends of which are provided with shoes 23 arranged opposite the flanges of each ring. The shoes 23 may have their concave sides covered with leather, or any other suitable material, which will not injure or wear the enamel or protective coating from the flanges of said rings. Arranged in a suitable position between the ends of the rod 17 is a collar 24 which is adapted to engage the inner end of a lever 25 pivoted to the frame on the shaft 26, said lever carrying at its outer end a brake shoe 27

adapted to be brought into contact with the upper surface of the whirl 10, when the foot lever 20 is depressed.

The operation of my device is as follows: The parts 5 being in the position shown at the left hand side of Fig. 2, that is to say, with the foot lever 20 depressed and the brake 27 forced against the whirl 10, the flanged ring 6 is placed between the rollers 5 and upon the shoes 23 carried by the yoke 22. The thread is led 10 through the eye 16' of the thread board, and through the flier 13 to the bobbin 14, the shafts 4-4 and the tin roller 7 being positively rotated from any suitable source of power. After the thread has been attached to the bobbin, the foot is lifted from the foot lever 20. 15 and the rod 17 is permitted to fall to the position shown at the right hand side of Fig. 2, whereupon the brake is removed from the whirl 10, and the ring 6 is allowed to drop and to be positively rotated by the contact of its flanges upon the rollers 5-5 carried by the shafts 20 4-4. The untwisted threads will then be delivered directly from the rotating rings 6 through the guide eye 16' to the flier 13, which, being positively rotated, will impart a twist to the thread between the end of the flier and the point where the thread leaves the ring. The 25 rotation of the flier will drag the bobbin 14 around the spindle 8, and the builder rail 15 will impart to the bobbin a vertically reciprocatory motion, as a result of which the twisted thread will be wound in regular courses upon the bobbin. If, for any reason, as for 30 instance, the breaking of one or more of the filaments composing the thread, it should be desirable to discontinue the operation of twisting, it is merely necessary to depress the foot lever 20, whereupon the brake 27 will be brought into contact with the whirl 10 on the 35 spindle 8, and at the same time the ring 6 will be lifted by the yoke 22 out of contact with the driving rollers 5, thus simultaneously stopping the rotation of both the spindle and the flanged rings.

While I have described and illustrated one form of 40 my invention, it is to be understood that other forms may be employed without departing from the spirit of my invention, since my invention contemplates the embodiment in any spinning or twisting frame of a mechanism for spinning and imparting a twist to a 45 thread composed of untwisted and substantially parallel filaments of artificial silk, or similar material, as the same are delivered directly from the bodies upon which they are wound when first formed, and upon which they are subjected to the subsequent steps of 50 washing, drying, and bleaching, preparatory to forming the same into a twisted thread of artificial silk.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States, is:—

55 1. In a machine for twisting together filaments of a thread, the combination with a body adapted to have wound thereon a thread composed of filaments, and means for positively rotating said body, of a twisting mechanism and means for conducting said untwisted thread 60 directly from said body to said twisting mechanism and for allowing the twist to extend from the said twisting mechanism to said body.

65 2. In a machine for twisting together filaments of a thread, the combination with a body adapted to have wound thereon a thread composed of filaments, and means for positively rotating said body, of a twisting mechanism, means for conducting said thread directly from said body

to said twisting mechanism and for allowing the twist to extend from the said twisting mechanism to said body and means for stopping the rotation of said body. 70

3. In a machine for twisting together the filaments of a thread of artificial silk or similar material, the combination with a spinning spindle, of a ring adapted to have wound thereon the thread of untwisted filaments, and means to positively rotate said ring, to deliver the filaments directly to said spindle, means to positively rotate 75 said spindle and a bobbin loosely mounted on said spindle to wind up the thread as it is spun.

4. In a machine for twisting together the filaments of a thread of artificial silk or similar material, the combination with a spinning spindle, of a ring adapted to have wound thereon the thread of untwisted filaments, of means to positively rotate said ring, to deliver the filaments directly to said spindle, means to positively rotate 80 said spindle, a bobbin loosely mounted upon said spindle to wind up the thread as it is spun, and means for simultaneously disconnecting said ring from its driving means and stopping the rotation of said spindle. 85

5. In a machine for twisting together the filaments of a thread, the combination with a twisting mechanism, of a 90 pair of shafts, means to positively rotate said shafts, and a ring supported and rotated by said shafts, of means to twist the thread from the point at which it leaves said ring.

6. In a machine for twisting together the filaments of a thread of artificial silk or similar material, the combination with a flanged ring and means for supporting and rotating said ring by its flanges, of means adapted to be brought into engagement with said flanges to lift said 95 ring from its engagement with said rotating means. 100

7. In a machine for twisting together the filaments of a thread of artificial silk or similar material, the combination with a pair of shafts, means to rotate said shafts in the same direction, and a flanged ring adapted to carry the thread of untwisted filaments, of means adapted to be brought into engagement with the flanges of said ring to lift said ring out of its driving connection with said 105 shafts. 105

8. In a machine for twisting together the filaments of a thread of artificial silk or similar material, the combination of a pair of parallel shafts, a series of rollers mounted on said shafts, means to rotate said shafts in the same direction, a flanged ring supported on and rotated by said rollers, a spinning spindle, means to rotate said spindle, and foot operated means for lifting said ring from its engagement with said rollers and simultaneously applying a 110 brake to said spindle. 110

9. In a machine for twisting together the filaments of a thread of artificial silk or similar material, the combination of a flanged ring adapted to contain the thread of 115 untwisted filaments, a pair of parallel shafts, means to rotate said shafts, rollers mounted upon said shafts and adapted to support said ring and to rotate the same by their contact with the flanges of said ring, a spindle, means for positively driving said spindle, a flier mounted 12 upon said spindle and rotated thereby, a bobbin loosely mounted upon said spindle and adapted to wind the twisted filaments as they are delivered from said ring, a brake for said spindle, a lifting device located between said shafts and beneath the flanges of said rollers, and foot 125 operated means for simultaneously applying said brake to said spindle, and for moving said lifting device upwardly into engagement with the flanges of said ring to lift said ring out of contact with said rollers. 130

10. In a machine for twisting together the filaments of a thread of artificial silk or similar material, the combination with a ring and means for supporting and rotating said ring of means normally out of contact with said ring and adapted to be brought into engagement with said ring to lift the same from its engagement with said rotating 135 means. 140

In witness whereof I have hereunto set my hand this 19th day of February, A. D. 1906.

MONTGOMERY WADDELL.

Witnesses:

ALEXANDER PARK,
ALSTON B. MOULTON