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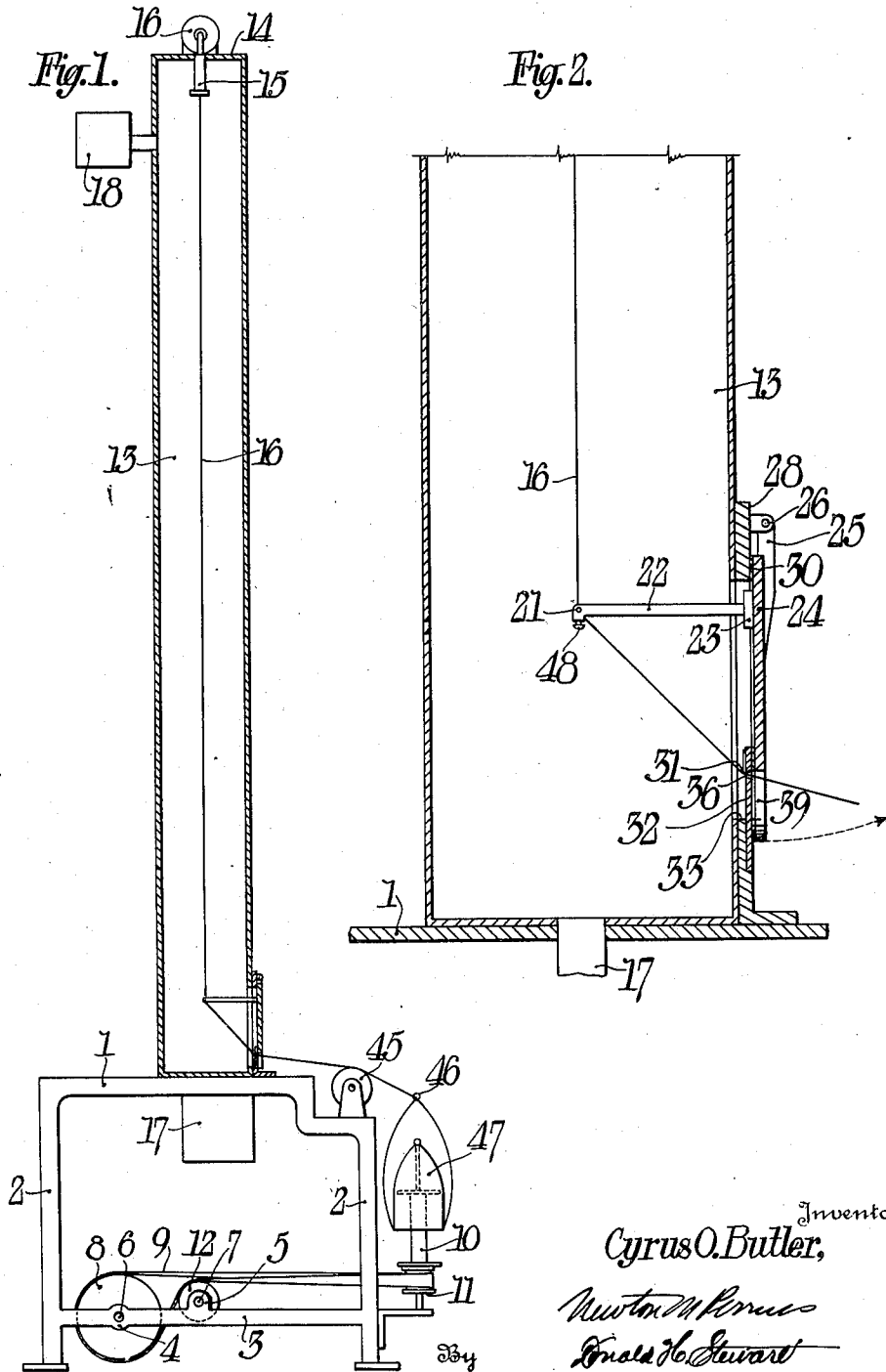
C. O. BUTLER

1,994,566

ARTIFICIAL SILK SPINNING MACHINE

Filed July 6, 1933

2 Sheets-Sheet 1



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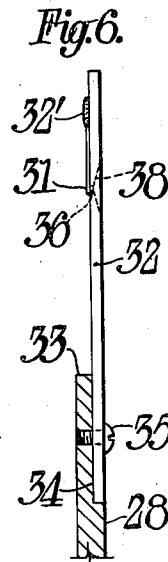
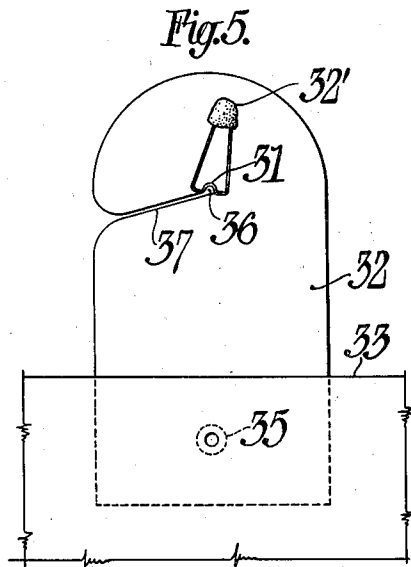
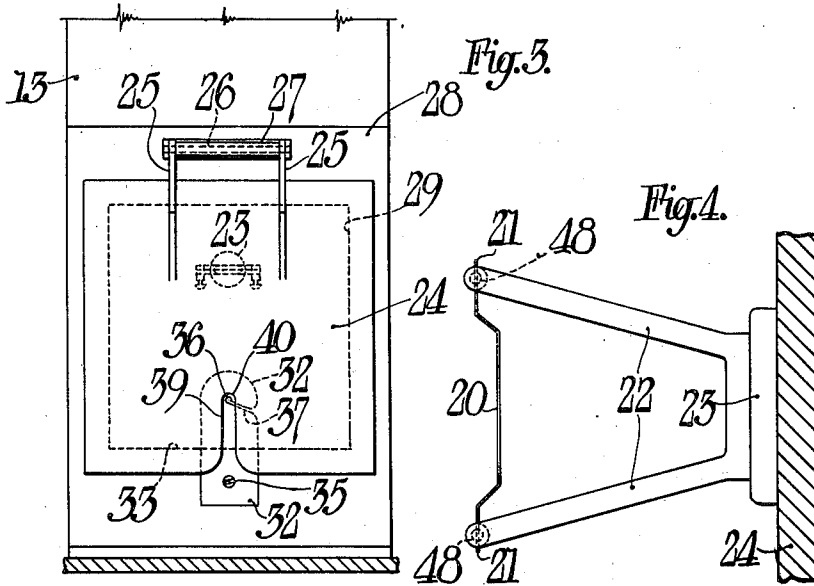
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UNITED STATES PATENT OFFICE

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ARTIFICIAL SILK SPINNING MACHINE

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Application July 6, 1933, Serial No. 679,183

7 Claims. (Cl. 18—8)

This invention relates to the art of spinning artificial silk and particularly to the provision of a suitable thread guides in such machines. One object of my invention is to provide a spinning machine in which the thread guides normally located inside of the cabinet are readily accessible for inspection and cleaning from the outside of the cabinet. Another object of my invention is to provide an artificial silk spinning machine with a thread exit which will not damage the thread and which is substantially gas-tight. Another object of my invention is to provide thread guides with means for directing thread into the thread guides to facilitate the threading operation. Another object of my invention is to provide a spinning machine with thread guides and with means for directing thread to the guides, these means being in the form of guideways which are readily accessible for threading the machine but which are rendered inoperative when the machine is in position to operate. Still another object of my invention is to provide a machine which can be quickly and easily threaded and other objects will appear from the following specification, the novel features being particularly pointed out in the claims at the end thereof.

Coming now to the drawings wherein like reference characters denote like parts throughout: Fig. 1 is a side elevation shown partially in section of a typical spinning machine having thread guides constructed in accordance with and embodying a preferred form of my invention;

Fig. 2 is an enlarged sectional view partially in elevation showing a portion of the spinning machine illustrated in Fig. 1;

Fig. 3 is a fragmentary front elevation of a portion of the machine shown in Fig. 1;

Fig. 4 is a top plan view of one of the film guides used in a machine constructed in accordance with my invention;

Fig. 5 is a front elevation of a second film guide constructed in accordance with my invention and also illustrating the thread guide bracket and the means for directing thread to the guide;

Fig. 6 is a side elevation partially in section of the thread guide shown in Fig. 5;

While certain features of my invention may be applied to machines employing thread guides of various different types, the invention is particularly adapted for use on a spinning machine and accordingly as a preferred embodiment of my

invention it has been shown in connection with such a machine.

In the embodiment shown in Fig. 1 the spinning machine may consist of a table or base 1 supported by legs 2, there being a cross bar 3 carrying bearings 4 and 5 for shafts 6 and 7.

Shaft 6 may be a power-operated shaft and may carry a pulley 8 about which a belt 9 passes, this belt driving the bobbin 10 through the pulley 11.

The shaft 7 may support an idle pulley 12 which positions the belt 9.

From the table 1 there extends upwardly a cabinet 13 in the top of which 14 there is mounted a spinneret 15 of any preferred construction which receives the dope from which the artificial silk is made, this dope being pumped to the spinneret by a suitable pump 16.

The spinneret may be of any well known type preferably containing a multiplicity of minute holes, each of which produces a single filament or strand of thread which may be twisted into a single strand 16.

It is customary with a machine of this type to circulate air or gas through the cabinet 13 and accordingly warm air may be admitted through the duct 17 so as to pass upwardly through the cabinet 13 and so that it may be withdrawn from the cabinet through a second duct 18.

Ordinarily a plurality of these machines are arranged together adjacent to each other on a single frame.

After the thread 16 has been forced out of the spinneret 15 and drawn through the chamber 13 so that the solvent vapors may be evaporated and drawn off, it is necessary to pass the thread out through an exit from the chamber 13. Since the solvent vapors are usually circulated and recovered, it is desirable to have as little opening through the cabinet 13 to the outside of the cabinet as is possible because it is desirable to prevent hot air or gas from escaping outside of the cabinet and it is undesirable to permit outside air to be drawn into the cabinet. At the same time, the thread is delicate and provision has to be made to withdraw the thread from the cabinet without marring or breaking it.

I have provided for this purpose the structure shown in Figs. 2 to 6, inclusive, in which the exit opening for the filament 16 from the cabinet 13 is in the form of a very small aperture 36 through which the thread passes. The thread is guided through this aperture without having contact with it by a pair of guides. Film guide 20, as shown in Fig. 4, may consist of a U-shaped piece

of piano wire, the ends of which 21 are carried by the arms 22 of a U-shaped bracket having a base 23 fastened to a door 24. This door carries a pair of arms 25 through which a hinged
5 pintle 26 passes, this pintle being supported by a second hinge member 27 carried by a door frame 28.

The door frame 28 has an opening 29 which may be closed by the door and, as shown in Fig. 2,
10 there is a heavy gasket 30 around the door adapted to make a substantially gas-tight connection with the cabinet 13.

The second thread guide 31 is preferably supported by a bracket 32, being soldered thereto at
15 32'. Like thread guide 20, I have formed 31 of piano wire since this material forms an ideal surface for guiding the delicate thread. The bracket 32 is preferably carried by the edge 33 of the door frame 28 and may be attached in a
20 rabbet 34 therein by means of screw 35 as indicated in Fig. 6. It will be noted here that the rabbet is of the same depth as the thickness of the bracket 32 so that it will lie flush with the front surface of the door frame 28 and so that the door
25 gasket 30 may make a tight connection therewith.

It should be also noted that the thread guide 31 is carried on the back of the bracket 32 when looking
30 at the front of the cabinet, Fig. 1, and that there is a small rounded opening 36 in the bracket which lies at the end of a guideway 37 formed by slotting the bracket 32. On the opposite side of the bracket from the thread guide 31 the metal is cut away at 38 so that the hole 36 extends
35 through only a thin part of the bracket. This, of course, reduces the liability of the thread from coming in contact with anything but the wire guide 31.

It should be noted that the door 24 is likewise provided with a slot 39, this slot terminating in
40 a rounding end 40 of somewhat larger diameter than the opening 36. The slot 39 forms a second guideway for directing thread in the proper position in initially threading the machine and it should be particularly noted that the slot 39 of the door and the slot 37 of the bracket 32 are
45 angularly disposed with respect to each other—that is, they lie in a non-parallel relation. The reason for this is that when the door is closed there is only a very small opening extended into the cabinet, the aperture 36 and a small portion
50 of the slot 37. However, when the door is swung open for threading the machine it is a simple matter to direct the thread through slot 37 to the aperture 36 so that it will contact with the
55 wire guide 31 and to pass the thread up through the slot 39, after which the door may be closed.

With the construction above described it will be evident that a substantially gas-tight connection is made between the door and the cabinet 13 and
60 that there is only an extremely small opening through which the thread is guided in its exit from the cabinet. It should be noted that in passing from the cabinet the thread touches only the wire guides 20 and 31 and since after the thread leaves the guide 31 it passes over the usual
65 type of feed roll 45 to a thread guide 46 from which it balloons about the cap 47 being wound on the revolving bobbin 10 in the usual manner.

There are a number of advantages in providing
70 thread guides which are readily accessible from the outside of the cabinet. It will be noted that the guide 20 as above described is carried by the bracket 23 which is mounted directly on the door 24. Consequently, when the door 24 is
75 swung in the direction shown by the arrow in

Fig. 2 about its hinged pintle 26 the thread guide 20 is likewise swung through the door frame into a position in which it can be readily inspected and cleaned. Moreover, it is a simple matter to replace worn thread guides 20 by merely releasing the screw 48 and withdrawing the ends 21 of the piano wire from their support enabling a new guide to be placed in position.

The necessity for inspection of this guide is occasioned by the fact that the yarn may attach itself to the guide. Dope may drop from the top of the cabinet when the sprockets are being worked on or changed and, of course, the guide itself in time may become worn. With the guide 20 mounted on the door it is a quick
15 and easy matter to swing the guide out of the cabinet into a position in which it may be either readily cleaned or replaced.

The second guide 31 is also readily accessible from the outside of the cabinet by swinging the door 24 open since the bracket 32 fits into a rabbet 34 and is held in position by a single screw 35. This bracket can be readily removed and replaced by a new one if necessary. However, it is usually only necessary to clean the
25 thread guide 31 and this can be readily done when the door is open without removing the bracket 32.

Not only are the two brackets with their thread guides readily accessible by means of the door construction but the machine is an extremely easy
30 one to thread quickly. When the thread 16 is started from the spinneret 15 and reaches the bottom of the cabinet after having passed through the counter current flow of hot air from the duct 17 to the duct 18 in the usual manner
35 the door may be quickly opened, and the thread guided over the guide 20, passed up through the slot 37 so as to be directed to the guide 31 and then the door may be closed, the thread being passed through the door slot 39. This operation
40 can be very quickly and very easily performed so that there is very little change in the temperature of the cabinet 13. The thread 16 is then passed over the feed roll 45 and is attached to the bobbin 10.

While it is obvious that changes may be made from the construction shown in the preferred embodiment of my invention shown in the drawings and while my improved thread guides can be applied to the other types of artificial silk spinning machines, I contemplate as within the scope of my invention all such modifications as may come within the scope of the appended claims.

What I claim as my invention and desire to be secured by Letters Patent of the United States is:

1. In a spinning cabinet for artificial silk, the combination with a casing, of a spinneret mounted therein, a door in said cabinet, and a thread guide located inside of the casing directly beneath the spinneret and mounted on the door whereby the thread guide may be swung with the door to and from an operative position.

2. In a spinning cabinet for artificial silk, the combination with a casing, of a spinneret mounted therein, a door in said cabinet having an opening therethrough, a thread guide mounted in said door, a second thread guide mounted on a frame for the door, and adjacent said door opening whereby said second thread guide may with the door form a substantially gas tight opening through which said thread may pass.

3. In a spinning cabinet for artificial silk, the combination with a casing, of a spinneret mount-

ed therein, a door in said cabinet having an opening therethrough, a thread guide mounted in said door, a second thread guide mounted on a frame for the door, and adjacent said door opening whereby said second thread guide may with the door form a substantially gas tight opening through which said thread may pass and angularly disposed walls on the second thread guide and door to facilitate threading the thread guide.

4. In a spinning cabinet for artificial silk, the combination with a casing, of a spinneret mounted therein, a door in said cabinet having an opening therethrough, a thread guide mounted in said door, a second thread guide mounted on a frame for the door, and adjacent said door opening whereby said second thread guide may with the door form a substantially gas tight opening through which said thread may pass and angularly disposed walls on the second thread guide and door to facilitate threading the thread guide, the angularly disposed walls on the second thread guide and door being positioned at different angles whereby the opening between the two walls is of small size.

5. In a spinning machine for artificial silk the combination with a casing, of a spinneret mounted in one end of said casing, a slotted door in the opposite end of said casing, means for withdrawing thread from said casing and through said door including a pair of thread guides, one

carried by said door, and the other carried by said cabinet adjacent said door, whereby both of said thread guides may be accessible for inspection by opening said door.

6. In a spinning machine for artificial silk the combination with a casing, of a spinneret mounted in one end of said casing, a slotted door in the opposite end of said casing, means for withdrawing thread from said casing and through said door including a pair of thread guides, one carried by said door, and the other carried by said cabinet adjacent said door, supporting brackets for said thread guides, means for positioning thread in said film guides, said means being so located with respect to said door that the said means is accessible for threading said guides only when said door is open.

7. In a machine for spinning artificial silk, the combination with a cabinet of a spinneret mounted therein at one end of the cabinet, a door mounted in the other end of the cabinet, a thread guide carried by the door and located directly beneath the spinneret, a thread guide bracket mounted in the cabinet adjacent the door, means carried by the bracket for positioning thread in the thread guide, and means included in said door for rendering the means for positioning thread inoperative when said door is closed.

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