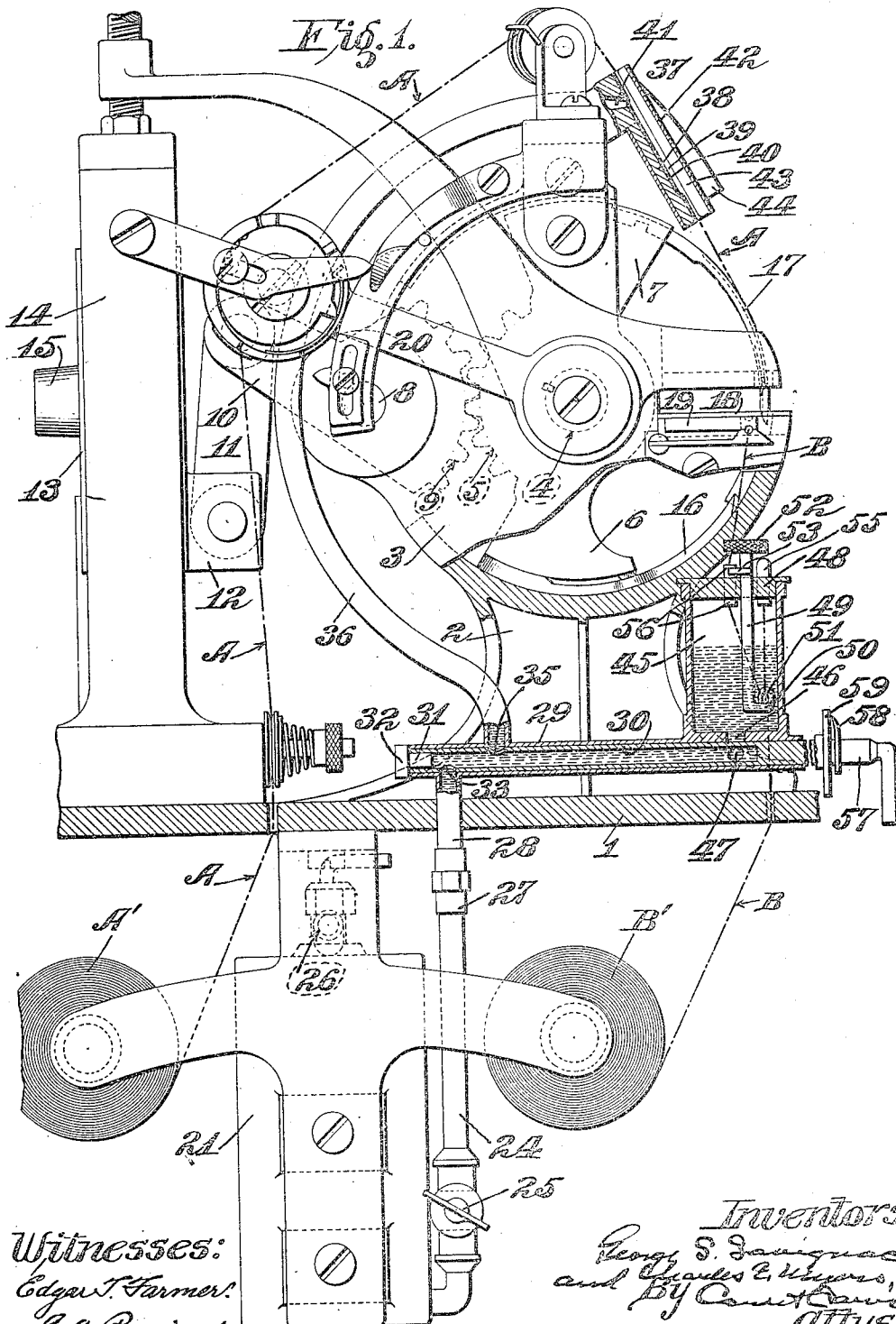


G. S. SAVIGNAC & C. E. MYERS.
 THREAD TREATING DEVICE FOR SEWING MACHINES.
 APPLICATION FILED NOV. 19, 1909.

Patented Feb. 6, 1912.

2 SHEETS—SHEET 1.

1,016,901.



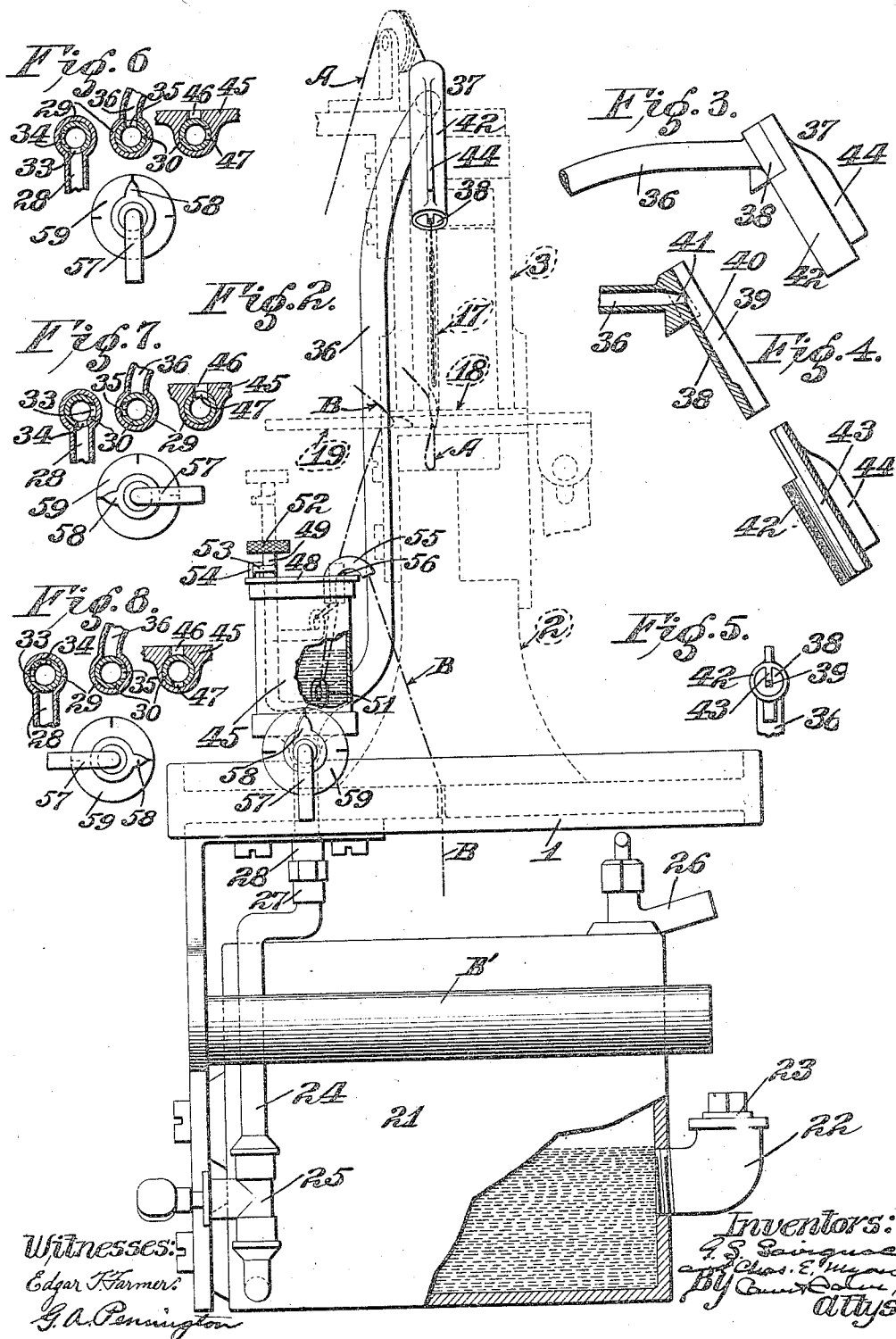
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

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WALTER G. BATTLE, CYRUS E. CLARK, AND THOMAS W. FUQUA, ALL OF ST. LOUIS,
MISSOURI.

THREAD-TREATING DEVICE FOR SEWING-MACHINES.

1,016,901.

Specification of Letters Patent.

Patented Feb. 6, 1912.

Original application filed June 11, 1909, Serial No. 501,462. Divided and this application filed November
12, 1909. Serial No. 523,944.

To all whom it may concern:

Be it known that we, GEORGE S. SAVIGNAC and CHARLES E. MYERS, both citizens of the United States, and residents of the city of St. Louis and State of Missouri, have invented a certain new and useful Improvement in Thread-Treating Devices for Sewing-Machines, of which the following is a specification.

The subject matter of the present invention is divided out of an application for Letters Patent for an improvement in sewing machines, Serial No. 501,462, filed by us on June 11, 1909.

The present invention relates to thread treating devices for sewing machines.

It has for its principal objects to avoid the disadvantages incident to a waxed or treated thread hardening before reaching the stitch forming mechanism; to obviate the necessity of passing the waxed or treated thread through the tension, take up and several guiding devices; and to attain certain advantages hereinafter more fully appearing.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings which form part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a view, partly in side elevation and partly in vertical section, of a portion of a sewing machine which is provided with a thread treating device embodying our invention; Fig. 2 is a view, partly in front elevation and partly in vertical section, showing the thread treating device in full lines and the other parts of the machine in dotted lines; Fig. 3 is a fragmentary side elevation of the needle thread member of the treating device; Fig. 4 is a longitudinal section of the parts of the needle thread member detached; Fig. 5 is an end view of said member; and Figs. 6, 7 and 8 are diagrammatic views showing the different positions of the controlling valve for the treating device.

For the purposes of illustration the thread waxing or treating device is shown in the accompanying drawings as applied to the lock-loop stitch sewing machine set forth in our

application for Letters Patent, Serial No. 501,462, hereinbefore referred to. Only the parts of the machine which are directly associated with the present invention will be herein set forth.

As shown in the accompanying drawings, the machine comprises a base 1 having a standard 2 thereon. On this standard is a circular housing 3 having flattened side walls. Extending transversely through the center of the housing is a shaft 4. A segment gear 5 having two oppositely disposed segmental extensions 6, 7, is fixedly mounted on the shaft within the housing. Journalled on a transverse shaft 8 in the rear portion of the housing is a second segment gear 9 which meshes with said first mentioned segment gear 5. The segment gear 9 has a lever arm or extension 10 which is pivotally connected to one end of a link or bar 11 whose opposite end is pivotally connected to a lug or ear 12 on a vertically movable block or member 13. The block is slidably mounted in a vertical frame 14, which is mounted on the base 1. The block is provided with a laterally projecting stud or roller 15 which is adapted to cooperate with a cam groove in a rotary disk (not shown) whereby a reciprocatory motion is imparted to the block when the disk is rotated.

Pivotally mounted on the segmental extension 6 of the segment gear 5 is a curved awl 16. The awl is arranged to cooperate with certain devices within the housing so that it is oscillated laterally at the same time it is reciprocated by the oscillation of the segment gear 5 upon which it is mounted. By this means, the work is intermittently fed forward each time the awl pierces it so as to bring the puncture in the path of the needle. The needle 17 is fixedly mounted on the segmental extension 7 of the segment gear 5; and both the needle and the awl are curved on the same radius from the axis of the shaft 4.

The upper front portion of the housing 3 is cut away to provide space for a work table or support which preferably comprises a horizontal plate 18. This plate is firmly secured to the housing and it is provided with a slot through which the awl and needle work. A carrier 19 for the locking-loop

thread is slidably mounted in a horizontal guideway in or under the table 18 and it is intermittently actuated. It has a hook portion which is reciprocated across the slot in the table so as to lay a loop of the locking thread through a loop of the needle thread which is carried through the work by the needle. The stitch is set or completed by pulling the needle thread so as to interlock the two loops of thread and draw the same into the puncture in the work. This is accomplished by a take-up device comprising an oscillatory arm 20 which is fixedly mounted on the end portion of the rock shaft 4 outside of the housing 3. On this oscillatory arm is arranged a suitable thread guide with which a pivoted cam or other suitable gripping member coöperates. The take-up is arranged so that the thread is free to pass therethrough except during the time it is actuated to pull the thread in setting the stitch.

The thread treating or waxing material is used in a fluid state, preferably an ethereal solution of a viscid substance or a cement which becomes hardened when exposed to the atmosphere. This material is filled into the lower portion of a reservoir which is mounted on some convenient part of the machine. The reservoir 21 is preferably mounted on a bracket which is secured to the underside of the base 1. The supply spools A' and B' for the needle thread A and the locking loop thread B, respectively, are also preferably mounted on the bracket which supports the reservoir. The reservoir is provided with a suitable filling nipple 22 which is closed by a removable screw plug 23. Leading from the bottom portion of the reservoir is a pipe 24 having a suitable cut-off or valve 25. A valved nipple or tube 26 is provided at the top of the reservoir through which air may be forced into the reservoir and compressed above the liquid material therein so that when the valve 25 in the pipe 24 is opened, the liquid in the reservoir will be forced out through said pipe. The pipe 24 is extended upward and connected by a suitable coupling 27 to a depending pipe extension 28 of an elongated tubular valve-casing 29 which is located near the top side of the base 1. In this tubular valve-casing is rotatably fitted a tubular valve 30 which is closed by a plug 31 at its inner end, as shown in Fig. 1. The plug is tightly fitted into the end of the tubular valve and it is provided with an annular shoulder or collar 32 which bears against the end of the valve-casing and serves to retain the valve therein. The valve is provided with openings 33, 34 which are arranged to alternately register with the pipe extension 28; and it is also provided with an opening 35 which is arranged to register with a pipe 36 which leads from the valve

casing to a thread-guide and waxing or treating device 37. The openings in the valve 30 and pipes 28, 36 are arranged so that in one position of the valve, communication is established between the reservoir 21 and the device 37 through the pipe 24, pipe 28, valve 30 and pipe 36.

The waxing or treating device comprises an elongated, downwardly and outwardly extending member 38, which is preferably cylindrical or round in cross section. The member 38 is provided with a longitudinal groove 39 in the outer portion of its surface. The bottom of this groove is preferably inclined toward the lower end of the member which is set at an angle so that the bottom of the groove is on a line substantially tangential to the outer side of the curved needle 17. The intermediate portion of the bottom of the groove is recessed or channeled slightly, as at 40; and into this channel portion the pipe 36 communicates through an opening 41 in the upper portion of the member 38. Slidably fitted on the member 38 is a sleeve 42 having a tapered longitudinal rib 43 which is adapted to fit in the groove 39 in said member 38. The inclination of the edge of the tapered rib corresponds to the inclination of the bottom of the groove so that the two surfaces are in parallel relation. By moving the sleeve 42 longitudinally of the member 38 the distance between the bottom of the groove and the edge of the rib may be widened and lessened when desirable or necessary. A rib or other suitable grasping piece 44 may be provided on the outer side of the sleeve 42 for conveniently manipulating the device.

In practice, it is preferable to pass the needle thread A through the waxing or treating device at all times whether the thread is to be treated or not. Provision has, therefore, been made to shut off the supply of waxing or treating material at the will of the operator, as hereinafter described. In the operation of the device, the sleeve 42 is removed from the member 38 and the end portion of the needle thread A is laid in the groove 39 in said member 38. The sleeve 42 is then slipped onto the member 38 until the thread is slightly compressed between the bottom of the end portions of the groove 39 and the edge of the rib 43 which is fitted in said groove. The pressure on the thread is sufficient to produce a slight resistance when said thread is pulled through the device. The end of the needle thread A is, of course, passed through the eye of the needle 17 and the stitches are made in the manner hereinbefore set forth. If it is desired to wax or treat the thread that goes into the work, the valve 30 is turned to open communication between the reservoir 21 and the device 37, whereupon the liquid material will be forced from the reservoir

by the air pressure behind it. As the thread is pulled through the device 37, it becomes saturated or coated depending upon the nature and consistency of the material which flows into the channel portion of the groove in the member 37 under pressure. The lower cooperating portions of the rib 43 and the member 38 serve as a stripper to remove surplus material from the thread as it leaves the device, and also prevents the material from leaking or oozing out when the device is properly adjusted or tightened on the thread. When it is desired to use a dry or untreated thread, it is only necessary to turn the valve 30 to shut off the supply of liquid material from the reservoir.

The waxing or treating device for the locking-loop thread B comprises a receptacle or chamber 45. This receptacle is preferably mounted on the valve casing 29 and communicates with the interior thereof, through an opening 46 which is arranged to register with an opening 47 in the tubular valve 30. When it is desired to supply waxing or treating material to the receptacle, the valve 30 is turned to open communication through its opening 47 and opening 46 into the receptacle 45, and also between the opening 34 and pipe 28. The liquid material from the reservoir will then be forced up into the receptacle and when the necessary amount shall have been supplied thereto, the valve is turned to close communication between the receptacle and the reservoir.

The cover 48 of the receptacle 45 is made detachable and may be secured in any desirable manner. Slidably mounted in a vertical opening in the cover 48 is a thread holder and guide comprising a rod 49 having a bent or laterally turned end portion 50 which is looped or provided with an eye 51 through which the locking-loop thread B is passed. On the outer end of the rod 49 is a knob 52 whereby the same can easily be manipulated. In order to hold the rod in lowered or immersed position, a hooked lateral extension 53 is provided on the outer end portion thereof so as to engage in a loop or retaining device 54 secured to the top of the receptacle. The thread B is taken up through an opening in the base 1, from the supply spool B', thence inwardly through a curved tube 55 in the top of the receptacle 45, thence through the loop 51 on the lower end of the rod 49, thence outwardly through a straight tube 56 in the top of the receptacle, and thence to the locking-loop carrier hook 19. When it is desired to wax or treat the thread B the rod 49 is lowered so as to immerse its loop or its eye 51 in the liquid material in the receptacle. The thread is thereby passed through the material in the receptacle. When it is desired to use a dry or untreated thread, the rod 49 is raised to

bring the bent end 50 close to the top of the receptacle and above the level of the liquid therein.

The openings in the valve 30 are so arranged that when communication is established between the reservoir 21 and the waxing device 37, communication is cut off between the reservoir and the receptacle 45, and vice versa; and that the valve may be turned to cut off communication between the reservoir and both the waxing device 37 and the receptacle 45 at the same time. To indicate the proper positions of the valve the handle portion 37 thereof is provided with a pointer or indicator 58 which is adapted to cooperate with a dial 59 on the outer end of the valve casing.

Obviously, the device admits of considerable modification without departing from our invention. Therefore, we do not wish to be limited to the specific construction and arrangement shown.

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

1. A sewing machine utilizing two threads and comprising separate guide devices for the needle-thread and locking-thread, respectively, said guide devices being arranged and adapted to receive a liquid treating substance, a reservoir containing a liquid treating substance under pressure, separate pipe connections between said reservoir and said guide devices, and means for controlling the passage of the treating substance through said pipe connections, whereby the supply may be both simultaneously and alternately cut off from said guide-devices.

2. A sewing machine comprising stitch-forming and stitch-setting mechanism, said mechanism comprising a needle which is adapted to carry a loop of thread through the work, a carrier for laying a loop of locking-thread through the needle loop, and means for pulling the needle-thread to interlock the two loops, a thread-treating device for the needle-thread located adjacent to the needle, a separate thread-treating device for the locking-thread located adjacent to the locking-loop-carrier, a reservoir adapted to contain a liquid treating substance, means for admitting air pressure into said reservoir, pipe connections between said reservoir and said thread-treating devices, and means for controlling the passage of the treating substance through said pipe connections.

3. In a sewing machine, a thread-treating device comprising a thread-guide, a closed reservoir for containing a normally liquid self-hardening treating substance under air pressure, said reservoir being located in a plane below said thread-guide, a pipe connection between said reservoir and said thread-guide, and means for cutting off communication between said reservoir and said thread-guide.

4. In a sewing machine, a thread-guide comprising a member having a longitudinal groove adapted to receive the thread therein, a sleeve slidably fitted on said member and having a rib adapted to fit in said groove to confine the thread therein, and a pipe communicating with said groove and a source of supply of a liquid treating substance.
5. In a sewing machine, a thread-guide comprising a member having a longitudinal groove adapted to receive the thread therein, said groove having an inclined bottom, a sleeve slidably fitted on said member and having a rib adapted to fit in said groove, the edge of said rib being inclined to correspond to the inclination of the bottom of said groove, whereby by moving said rib lengthwise in said groove the distance between the bottom of the groove and the edge of the rib may be varied, and a pipe communicating with said groove and a source of supply of a liquid treating substance.
6. In a sewing machine, a thread-guide comprising a member having a longitudinal groove adapted to receive the thread therein, said groove having an inclined bottom and the intermediate portion thereof being recessed, a sleeve slidably fitted on said member and having a rib adapted to fit in said groove, the edge of said rib being inclined to correspond to the inclination of the bottom of said groove, whereby by moving said rib lengthwise in said groove the distance between the bottom of the groove and the edge of the rib may be varied, and a pipe communicating with the recessed portion of said groove and a source of supply of a liquid treating substance.
7. In a sewing machine, a thread-treating device comprising a covered receptacle containing a liquid treating substance, a rod slidable vertically and rotatable in an opening through the cover of said receptacle, a thread guide on the lower end of said rod, a laterally projecting hook on said rod, and a keeper on the cover of said receptacle arranged and adapted to cooperate with said hook to releasably hold said rod with its lower end immersed in the liquid substance in said receptacle.
8. In a sewing machine, a thread-treating device comprising a covered receptacle adapted to contain a liquid treating substance, a vertically-movable rod extending through the cover into said receptacle and having a thread-guide on its lower end, a keeper on top of the cover of said receptacle, and a catch on said rod adapted to engage said keeper for releasably holding said rod with its lower end immersed in the liquid substance.
9. In a machine of the class described utilizing two threads, a reservoir containing a liquid treating substance under pressure, separate treating devices for the two threads, tubular means for conducting the liquid from said reservoir to said treating devices, and a valve arranged and adapted to simultaneously cut off communication between both of said treating devices, said valve being also arranged to cut off communication with one of said treating devices without affecting the other.
- In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.
- GEORGE S. SAVIGNAC.
CHARLES E. MYERS.
- Witnesses:
N. N. MITCHELL,
G. A. PENNINGTON.