

W. J. BRENNAN.
WAX THREAD SEWING MACHINE ATTACHMENT.
APPLICATION FILED APR. 9, 1908.

935,620.

Patented Sept. 28, 1909.

2 SHEETS—SHEET 1.

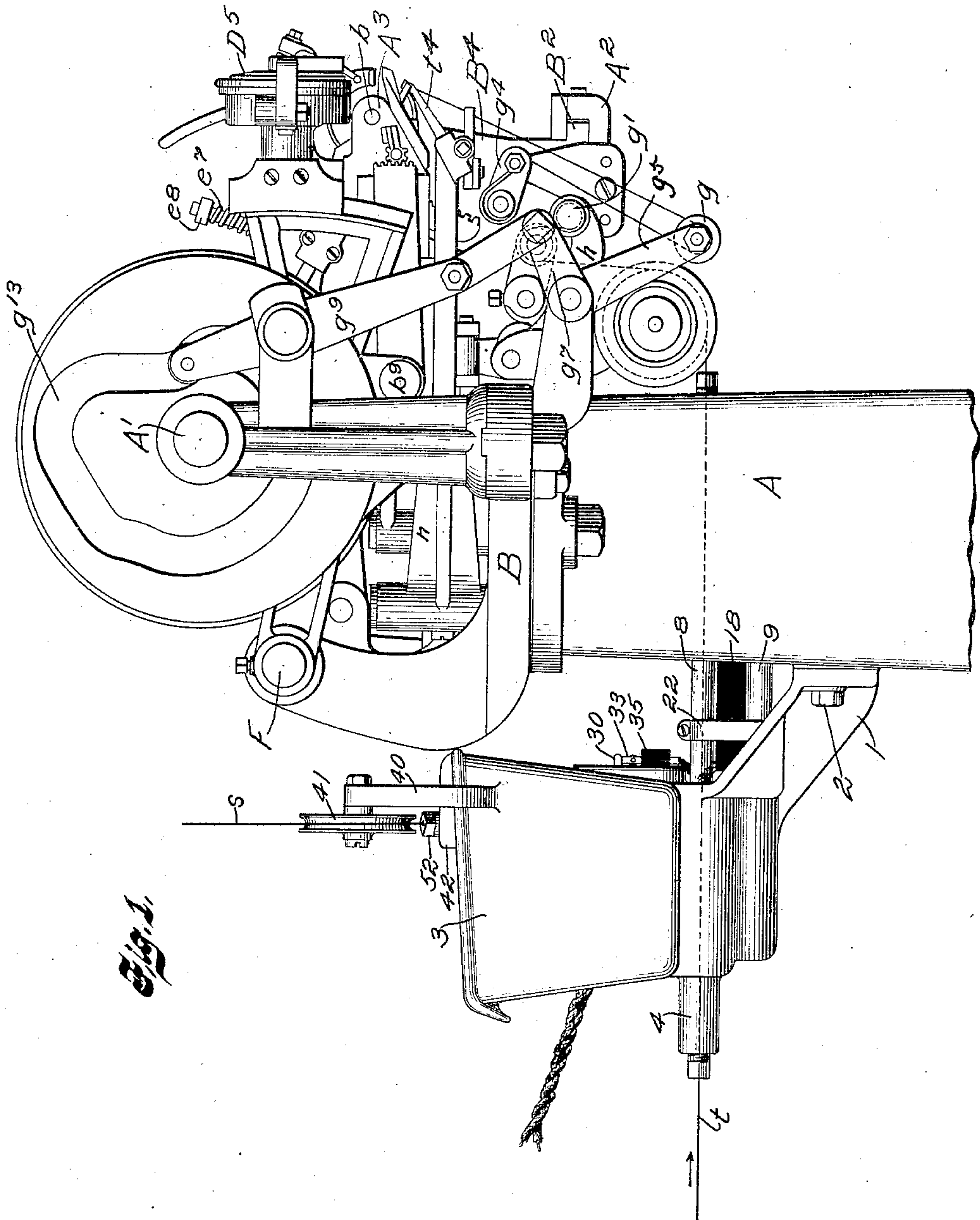


Fig. 1.

Witnesses:
Roswell F. Hatch.
Edward H. Palmer.

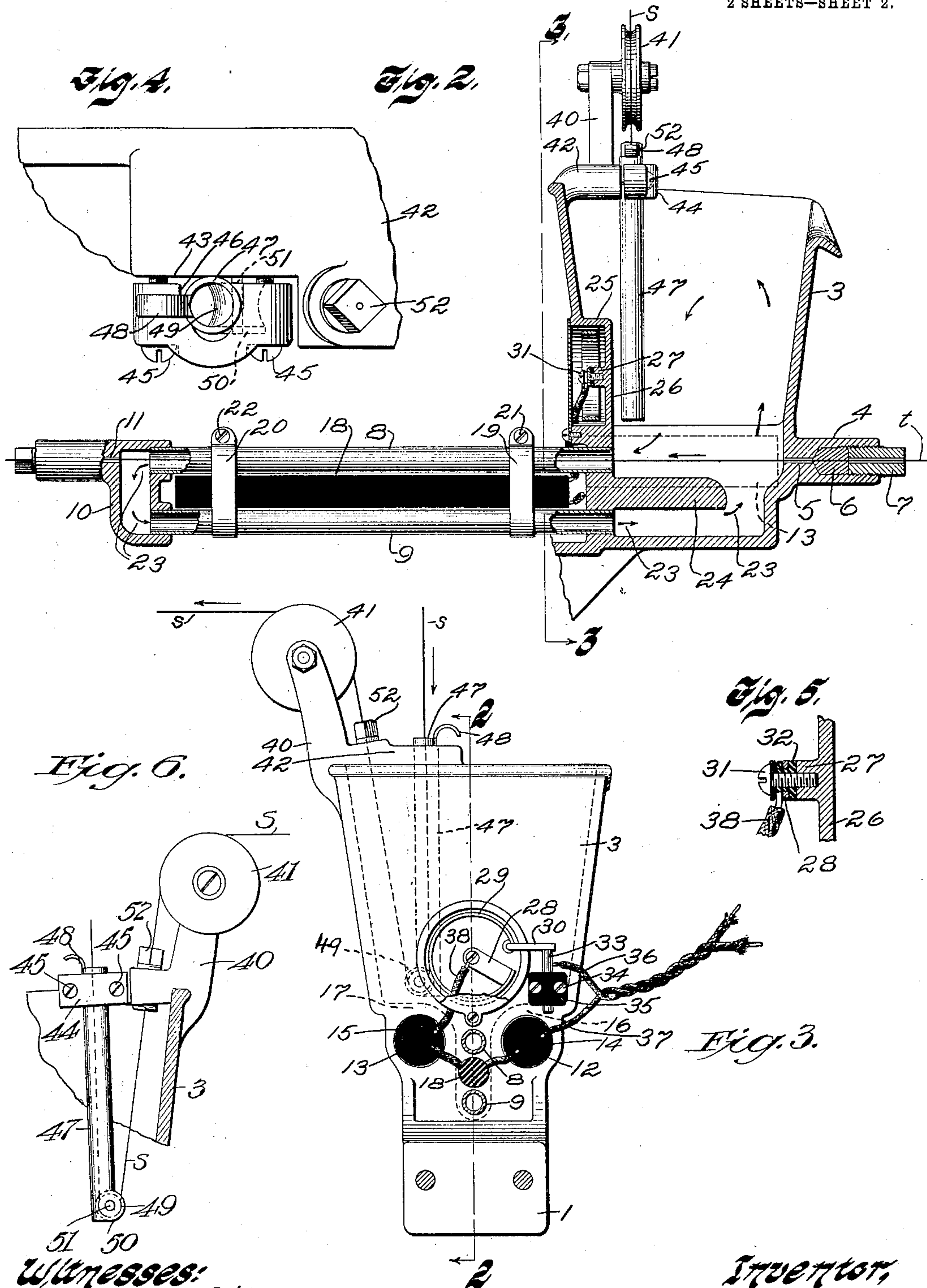
Inventor:
William J. Brennan
by Robt. P. Harris,
Attorney.

W. J. BRENNAN.
WAX THREAD SEWING MACHINE ATTACHMENT.
APPLICATION FILED APR. 9, 1908.

935,620.

Patented Sept. 28, 1909.

2 SHEETS—SHEET 2.



Witnesses:
Roemell F. Hatch.
Edward H. Palmer.

Inventor,
William J. Brennan
By Robt. D. Haines,
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM J. BRENNAN, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO THOMAS G. PLANT, OF BOSTON, MASSACHUSETTS.

WAX-THREAD-SEWING-MACHINE ATTACHMENT.

935,620.

Specification of Letters Patent.

Patented Sept. 28, 1909.

Application filed April 9, 1908. Serial No. 426,079.

To all whom it may concern:

Be it known that I, WILLIAM J. BRENNAN, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented an Improvement in Wax-Thread-Sewing-Machine Attachments, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

The invention to be hereinafter described relates to attachments for wax thread sewing machines.

The thread used by a wax thread sewing machine is drawn from a source of supply and passed through a suitable waxing device by which it is suitably provided with the waxing composition. This waxing composition consists principally of paraffin and rosin, and, in order that they be properly applied to the thread as it passes to the stitch forming mechanism, such composition is maintained in liquid state, various means having heretofore been employed to maintain this liquid condition. As well understood by those skilled in the art, the means heretofore employed to maintain the waxing composition in a liquid state have not been altogether satisfactory. On the one hand the waxing composition should be kept in the liquid state, but its temperature should be maintained uniform and never allowed to reach the boiling point. When in the liquid state the main constituents of the composition, being of different specific gravities, are liable to separate, the lighter going to the top, so that the thread under such conditions would not be properly supplied with the desired compound.

The present invention has for its object the provision of an attachment to a wax thread sewing machine that will overcome the objections heretofore experienced in this class of devices, and provide a waxing apparatus which shall be efficient in operation and which will enable the operator to readily manipulate the same and adjust it with relation to the conditions of use, all as will be hereinafter more fully explained in connection with the accompanying drawings and then definitely set forth in the claims.

In the drawings:—Figure 1 is a general side elevation of a wax thread sewing machine of well-known type having the present

invention applied thereto, the lower portion of the supporting standard being broken away; Fig. 2 is a central longitudinal section of the waxing attachment on the line 2—2, Fig. 3; Fig. 3 is a section on the line 3—3 of Fig. 2; Fig. 4 is a detached detail of the top portion of the waxing apparatus representing the means for holding the thread controlling or guiding device in place; and Fig. 5 is a detailed view of the thermostat mounting. Fig. 6 is a detail of the thread controlling or grinding device.

In the drawing, Fig. 1 illustrates in general side elevation a well-known type of wax thread sewing machine having the present invention applied thereto, such machine being of the type represented by the French and Meyer patent, 473,870. It is obvious, of course, that the invention might be applied to other types of wax thread sewing machines. In said Fig. 1, A represents a column upon which the usual head B, carrying the operative parts of a wax thread sewing machine, is mounted. The parts A', A², A³, B², B⁴, F, D⁵, g, g', g², g⁵, g⁷, g⁹, g¹³, h, e⁷, e⁸, b, b⁹, t, n, t², and other various operative connections are or may be all as shown and described in the said French and Meyer patent hereinbefore referred to. Further description of the operative parts of the machine is unnecessary as reference may be had for other characteristic structure and operation to the said French and Meyer patent.

Mounted on the standard A, preferably in the rear portion of the machine, is a bracket 1 secured to the said standard by a bolt or other means 2. Said bracket supports the waxing apparatus which is herein generally designated by 3. This waxing apparatus consists of a tank preferably formed of cast metal and having an inlet for the thread t at 4. This inlet may be of any usual type, and as herein shown consists of a projection having a small perforation 5. The projection 4 has a recess, as seen in Fig. 2, in which is placed a perforated flexible piece 6, preferably of rubber, and overlying said piece 6 is an externally screw-threaded, perforated plug 7. the screw threads of which engage interior screw threads on the projection 4, whereby the flexible piece 6 may be more or less compressed to tightly cling to the thread t passing therethrough, all as will be clearly seen in Fig. 2. Extending from the opposite por-

tion of the tank are the two pipes or conduits 8 and 9, the outer ends of these pipes or conduits being connected by a hollow piece 10, providing a passageway for the waxing composition as it passes in the direction of the arrows in Fig. 2. The piece 10, connecting the ends of the pipes or conduits 8 and 9, is preferably also provided with a passageway 11 for the thread t , leakage of the waxing composition therethrough being prevented by means substantially as already described with respect to the projection 4.

From the construction thus far described, it will be clear that the thread t will be drawn through the projection 4, at the right of Fig. 2, through the lower part of the tank, and then through the pipe 8 to the outer end thereof, at the left in Fig. 2, where it will pass through the opening 11 in the connecting piece 10. As the thread thus passes through the piece 10, the surplus waxing compound is stripped therefrom in a manner well understood by those skilled in the art.

In order that the waxing compound may be maintained in liquid condition and properly heated, it is constructed to provide a support for suitable electrical heating coils 12, 13. These heating coils 12, 13 are preferably inclosed in insulating material, as indicated in Fig. 3, and to provide a suitable support therefor in proper relation to the tank for heating the same, such insulated heating coils are received in suitable pockets or cylindrical receptacles 14, 15, formed in the lower part of and at each side of the tank. These pockets 14, 15, as indicated in Fig. 3, may be formed in any suitable manner, but in the present instance they are illustrated as being cast with or formed as part of the waxing tank, so that a thin wall of metal 16, 17, is interposed between the heating coils and the interior of the waxing tank. Disposed between the two pipes or conduits 8 and 9, leading from the waxing tank, there is also provided an insulated heating coil 18, such coil, as indicated in Fig. 2, preferably extending from a point near the entrance ends of the pipes or conduits 8 and 9 to a point near their exit ends, the purpose of such coil being to keep the pipes or conduits 8 and 9 heated, and consequently the wax material flowing therethrough, in a suitable liquid state. The heating coil 18 is secured in position between the pipes 8 and 9 by suitable clamps 19, 20, which embrace the pipes or conduits 8 and 9, and have their ends secured together by proper clamping screws 21, 22.

It will be obvious from the construction thus far disclosed that, upon an electrical current being passed through the heating coils 12, 13 and 18, the heat generated by the resistance to the passage of the current will cause the waxing compound not only

in the waxing tank itself to become heated, but also that in the pipes or conduits 8 and 9.

As well understood by those skilled in this art, as the thread t passes in the direction of the arrow in Fig. 2, and through the waxing tank in the tube or conduit 8, it will drag with it the waxing compound, and, as such compound reaches the exit end of the apparatus at 11, the surplus liquid wax will be stripped from the thread. As the thread continues to travel in the direction of the arrow, however, this accumulation of surplus waxing material cannot run backward through the pipe or conduit 8, but is forced to take the course of the arrows 23, thereby keeping up a continuous circulation of liquid material through the pipes or conduits 8 and 9 in the direction indicated by the arrows 23. This circulation of the liquid waxing material not only keeps the constituents of such material thoroughly mixed and therefore in proper condition for application to the thread, but also obviates the accumulation at the exit end of the waxing apparatus of what may be termed deteriorated wax, that is, wax through which the thread has already passed in intimate contact, and from which it has absorbed material for its proper waxing. In order that this circulation of wax shall not only proceed along the lines indicated but shall return the used wax back to the waxing tank near the rear portion thereof, the said waxing tank near its bottom portion is provided with the inwardly projecting tongue or lip 24, so that the returning wax, through the pipe or conduit 9 is caused to travel to the rear portion of the tank and then upward, as indicated by the arrows, to completely mix and blend together the constituents of the waxing material.

In order that the temperature of the wax compound may be maintained substantially uniform and always below the boiling point, means is herewith provided to regulate the heating capacity of the heating means. In the present embodiment of the invention, this regulating means or regulator is shown as a thermostat connected to the wax pot or tank in such manner that, when the temperature of the contents thereof is raised to a certain point, the thermostat will break the circuit connected to the heating coils, and, conversely, when the temperature falls below a certain point, the thermostat will again turn or close the circuit. This feature of the invention is best seen in Figs. 2 and 3, wherein it will be noticed a wall of the wax pot or tank is projected inwardly at 25 to form a chamber adapted to be partially surrounded by the contents of the wax pot or tank. In the illustrative form of the thermostat, as seen in Figs. 2 and 3, the inner wall 26 of said chamber has a lug 27 to which is connected the arm 28, Fig. 3, of a

thermostat 29, consisting preferably of a circular piece or pieces of metal, Figs. 2 and 3, carrying at its free end a contact piece 30, the said arm 28 of said thermostat being
5 mounted on a screw stud 31, and insulated from the walls of the chamber by a proper insulation 32.

Mounted upon the exterior of the wax pot or tank is an adjustable circuit contact 33,
10 Fig. 3, held thereto by means of screws 34 and an insulation 35, said contact 33 being connected to a wire 36, which in turn is joined to a suitable source of electric energy. The other wire 37, constituting the circuit, is
15 connected to one of the heating coils, as 12, Fig. 3, said heating coil 12 being connected to the heating coil 18, and it in turn to the heating coil 13, as indicated in Fig. 3. The heating coil 13, by means of a wire 38, is
20 connected to the thermostat 29 at the binding screw or post 31, as best illustrated in the enlarged detail of Fig. 5. Obviously, of course, the invention is not circumscribed by these details of structure, as various forms
25 of electrical connections and heating coils and character of thermostat might be employed, the essentials in these respects being that when the circuit, through the wires 36, 37, and the heating coils that may be
30 used, has served to raise the temperature of the wax in the wax pot or tank to a desired point, then the regulator or thermostat shall be caused to so regulate the heat current of electricity as to maintain the desired tem-
35 perature without danger of raising it to the boiling point. In the present illustration of the invention it is obvious that, as the temperature rises, the curved portion of the thermostat 29 carrying the arm 30 will ex-
40 pand more and more until, at last, it will raise the contact or arm 30 from the post 33, thereupon breaking the circuit. This will at once allow the heating coils 12, 13 and 18 to cool until, when the temperature has been
45 lowered to the desired point, the arm 29 of the thermostat will again contact, bringing the arm or contact 30 and post 33 into electrical connection, thereby again establishing the circuit.

In order that the device may be suitable to maintain different temperatures, or be adjusted to the particular materials employed in the waxing compound, the arm 28 of the thermostat is adjustably secured to the stud or projection 27 in the thermostat chamber by means of the screw 31, so that,
55 upon loosening said screw, the thermostat may be turned more or less to cause its arm or contact 30 to bear with more or less energy upon the post 33, thereby varying the amount of expansion necessary in the curved arm 29 of the thermostat in order to raise the arm or contact 30 from the post 33, all
60 as will be well understood by those skilled in the art. Obviously, other means of ad-

justing a thermostat to the various temperatures desired for its automatic operation will suggest themselves to the mind of an ordinary mechanic, as by adjusting the post 33.

As well understood by those familiar with
70 wax thread sewing machines, wherein a shuttle is employed, the bobbin or shuttle thread is also supplied with wax as well as the needle thread. The present invention
75 provides, therefore, a ready means for waxing the bobbin or shuttle thread, and such means is best illustrated in Figs. 2, 3 and 4. Preferably secured upon or formed as part of the waxing pot or tank is a bracket 40,
80 having an upwardly projecting arm on which is mounted a guide pulley 41. This bracket likewise has an arm 42 projecting over the top of the tank, said arm being provided with the recessed portion 43, Fig. 4.
85 This recessed portion 43 has a clamp piece 44 adjustably connected thereto by means of set screws 45, 45, said set screws, as indicated in Fig. 4, passing through the clamp piece 44 and into the standing part of the bracket
90 42. The clamp piece 44 is provided with a seat 46, said seat being preferably rounded to accommodate a substantially vertical tube 47 through which the thread passes in the direction of the arrows in Fig. 3. This tube
95 47, which may for identification be known as a thread guide tube, is preferably provided with a finger piece or handle 48 projecting into suitable position to be seized by the operator. The thread guide tube 47 carries at its lower end a guide roller 49, see
100 dotted lines in Figs. 3 and 4. The lower end of said tube preferably has its side walls split and turned outwardly at 50, as indicated in Fig. 4, to afford a bearing for
105 the pin 51 on which said guide roller 49 is supported, all as best shown in Fig. 4. It is desirable at times that the lower end of the thread guide tube 47 be reached, either for the purpose of passing the thread
110 about the guide wheel 49 or for cleaning purposes or otherwise. The present invention, by the construction hereinabove described, permits the said thread guide tube 47 to be conveniently raised from the ma-
115 terial in the wax pot or tank by simply loosening the screws 45 which bind the thread guide tube against the bracket arm 42. Obviously, the thread guide tube 47 may be returned to position with the guide
120 roller 49 in the waxing compound, and there clamped in place by the clamp piece 44 and its set screws 45. Extending from the bracket 42 is a wiper 52 which may be simply a perforated screw plug, as indicated,
125 or of any other suitable construction, its purpose being to simply wipe the surplus wax from the thread after it has passed down the thread guide tube around the guide roller 49, and been supplied with wax,
130

and as it rises in the direction of the arrow, Fig. 3, to be wound upon the bobbin, not shown.

Various forms and details of construction will suggest themselves to the mind of those skilled in the art as other embodiments of the present invention, which is not to be understood as confined to such details, and while the present illustration discloses a wax pot having suitable heating coils 12, 13, seated in chambers in the bottom part of the wax pot or tank, and the heating coil 18 extending substantially the full length of the tubes or conduits 8 and 9, it is to be understood that these features of the invention may be variously formed and assembled, and that the thermostat itself is characterized mainly by its adaptation to control the temperature of the material in the wax pot in such manner as to maintain it substantially constant, and preferably below the boiling point.

What is claimed is:—

1. In a wax thread sewing machine, the combination of stitch forming mechanism, a wax-pot having a heating coil receiving chamber formed in the bottom portion thereof, a plurality of tubes or conduits leading from the lower portion of the wax-pot and through one of which the thread passes, an electric heating coil disposed in the coil receiving chamber of the wax-pot, and an electric heating coil for heating the material in the tubes or conduits leading from the wax-pot.

2. In a wax thread sewing machine, the combination of stitch forming mechanism, a wax-pot, electric heating means associated with the wax-pot for heating the contents thereof, a plurality of tubes or conduits leading from the wax-pot and through one of which the thread to be waxed passes, electric heating means associated with said tubes or conduits, and connections between said tubes or conduits outside the wax-pot to direct material stripped from the thread passing through one of said tubes or conduits into the other of said tubes or conduits.

3. In a wax thread sewing machine, the combination of stitch forming mechanism, a wax-pot, electric heating means associated with the wax-pot for heating the contents thereof, a plurality of tubes or conduits leading from the wax-pot and through one of which the thread to be waxed passes, electric heating means associated with said tubes or conduits, connections between said tubes or conduits outside the wax-pot to direct material stripped from the thread passing through one of said tubes or conduits into the other of said tubes or conduits, and a thermostat to control the heating action of the electric heating means.

4. In a wax thread sewing machine, the combination of stitch forming mechanism, a

wax-pot for applying wax to the thread as it passes to said stitch forming mechanism, the walls of said wax-pot being provided with heating coil and thermostat chambers, an electric circuit, electric heating coils and thermostat disposed respectively within said chambers, and means governed by said thermostat to control the heating action of said coils as the temperature of the wax is raised or lowered beyond a determined point.

5. In a wax thread sewing machine, the combination of stitch forming mechanism, a wax applying apparatus having an entrance for the thread to be waxed and an exit for the thread when waxed, an electric heating means and thermostat for maintaining the wax at a substantially uniform temperature, and means to cause the wax stripped from the thread as it passes the said exit to be returned to the lower part of the wax-pot and maintain circulation of the wax.

6. In a wax thread sewing machine, the combination of a wax-pot having an entrance for the thread to be waxed and an exit for the thread when waxed, an electric heating means disposed adjacent the bottom portion of the wax-pot, and means to cause the wax stripped from the thread as it passes the exit to be returned to the bottom portion of the wax-pot and maintain a circulation of the wax.

7. In a wax thread sewing machine, the combination of a wax-pot, circulating tubes or conduits connected to said wax-pot, and through one of which tubes or conduits the thread is passed, an electric heating coil associated with said tubes or conduits, a stripping means to remove the surplus wax from the thread as it is delivered and circulating connections between said tubes or conduits to cause material stripped from the thread passing through one of said conduits to travel into the other tube or conduit.

8. In a wax thread sewing machine, the combination of a wax-pot, two circulating tubes or conduits connected thereto and through one of which the thread to be waxed is drawn, circulating connections between said tubes or conduits to cause material to pass from one to the other of said tubes or conduits as it is stripped from the thread; an electric heating coil for said tubes or conduits, an electric circuit containing said coil, and means to break and complete the circuit as the temperature of the wax rises and falls beyond a determined point.

9. In a wax thread sewing machine, the combination of a wax-pot, electric heating coils connected thereto, a plurality of tubes or conduits leading from said wax-pot and through one of which the thread is drawn, circulating connections between said tubes or conduits to cause material to pass from one to the other of said tubes or conduits as it is stripped from the thread, an electric heat-

ing coil for said tubes or conduits, an electric circuit including said heating coils, and means governed by the temperature of the wax to make and break said circuit.

5 10. In a wax thread sewing machine, a wax-pot having a bracket, a thread guiding tube extending from said bracket into the wax-pot, a guide wheel carried by said tube, means for clamping the guide tube in
10 position with respect to the bracket and for releasing said thread guide tube that it may be raised with respect to the fixed bracket to carry its lower end above the wax in the wax-pot while the bracket remains in
15 fixed position on the wax-pot.

11. In a wax thread sewing machine, a wax-pot having a bracket fixed thereto, a thread guide tube extending from said bracket down into said wax-pot and carry-
20 ing a guide wheel at its lower end, a clamp for adjustably holding the thread guide tube to the bracket and in operative position in the wax-pot and permitting said guide tube to be raised with respect to the bracket and
25 from the wax in the wax-pot.

12. In a wax thread sewing machine, the combination of a wax-pot having heating coil receiving chambers in its lower portion at each side of its center, a plurality of
30 tubes or conduits leading from the lower portion of the wax-pot between said cham-

bers, circulating connections between the tubes or conduits outside the wax-pot, and electric heating means disposed in said cham-
bers and in heating relation with said tubes 35 or conduits respectively.

13. In a wax thread sewing machine, the combination of a wax-pot, electric heating means for maintaining the contents thereof heated, a plurality of tubes or conduits pro- 40 jecting from said wax-pot and having circulating connection outside the wax-pot, and a circulating lip or tongue, as 24, extending into the wax-pot from a point adjacent the connection between the wax-pot and said 45 tubes or conduits.

14. In a wax thread sewing machine, the combination of a wax-pot, a plurality of non-concentric tubes or conduits leading therefrom, and through one of which the 50 thread to be waxed passes, a circulating connection between said tubes or conduits outside the wax-pot, and electric heating means associated with said tubes or conduits.

In testimony whereof, I have signed my 55 name to this specification, in the presence of two subscribing witnesses.

WILLIAM J. BRENNAN.

Witnesses:

ROSSELL F. HATCH,
REDFIELD H. ALLEN.