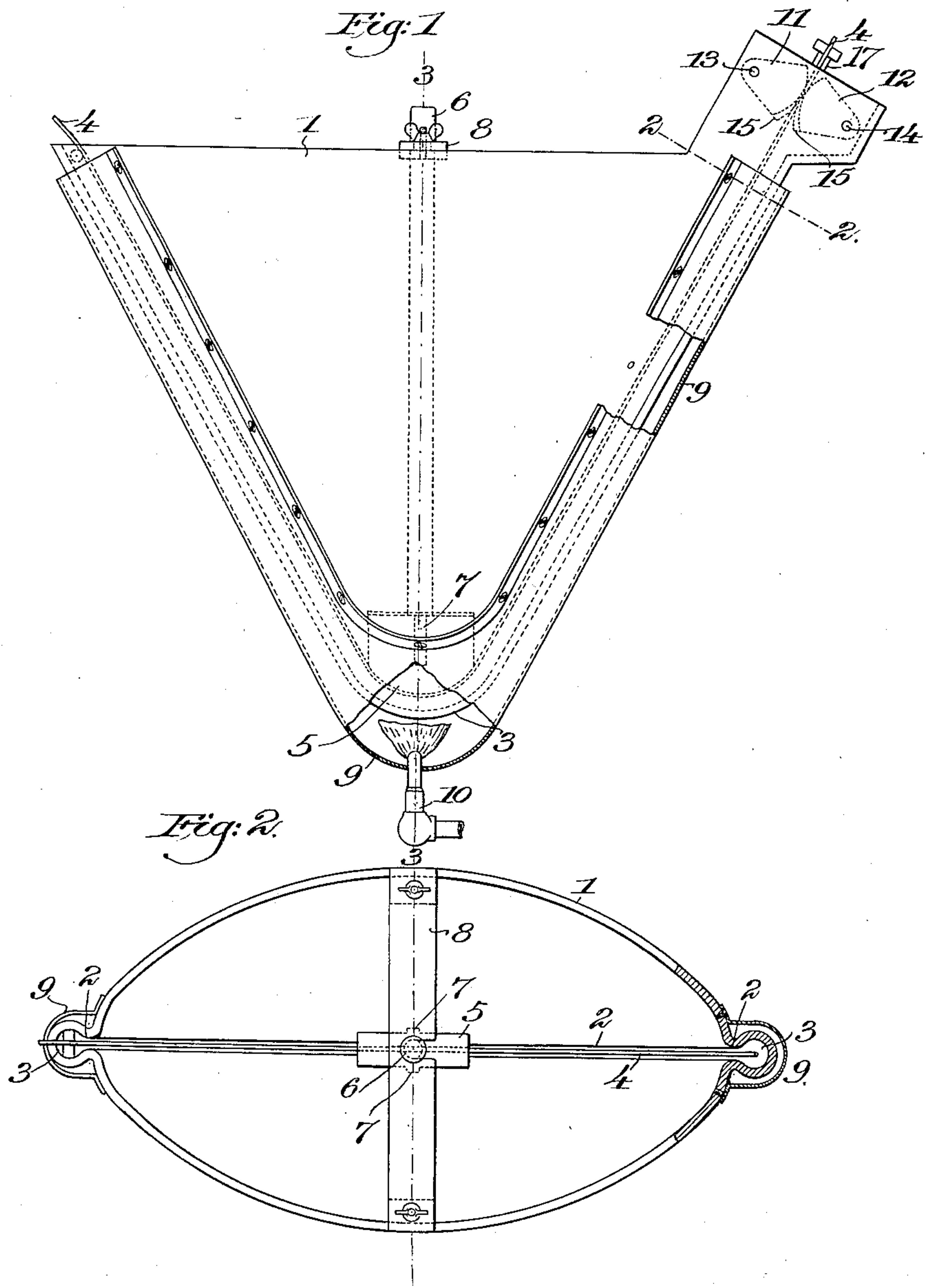


F. L. ALLEY.
 THREAD WAXING DEVICE.
 APPLICATION FILED JULY 23, 1902.

930,115.

Patented Aug. 3, 1909.

2 SHEETS—SHEET 1.



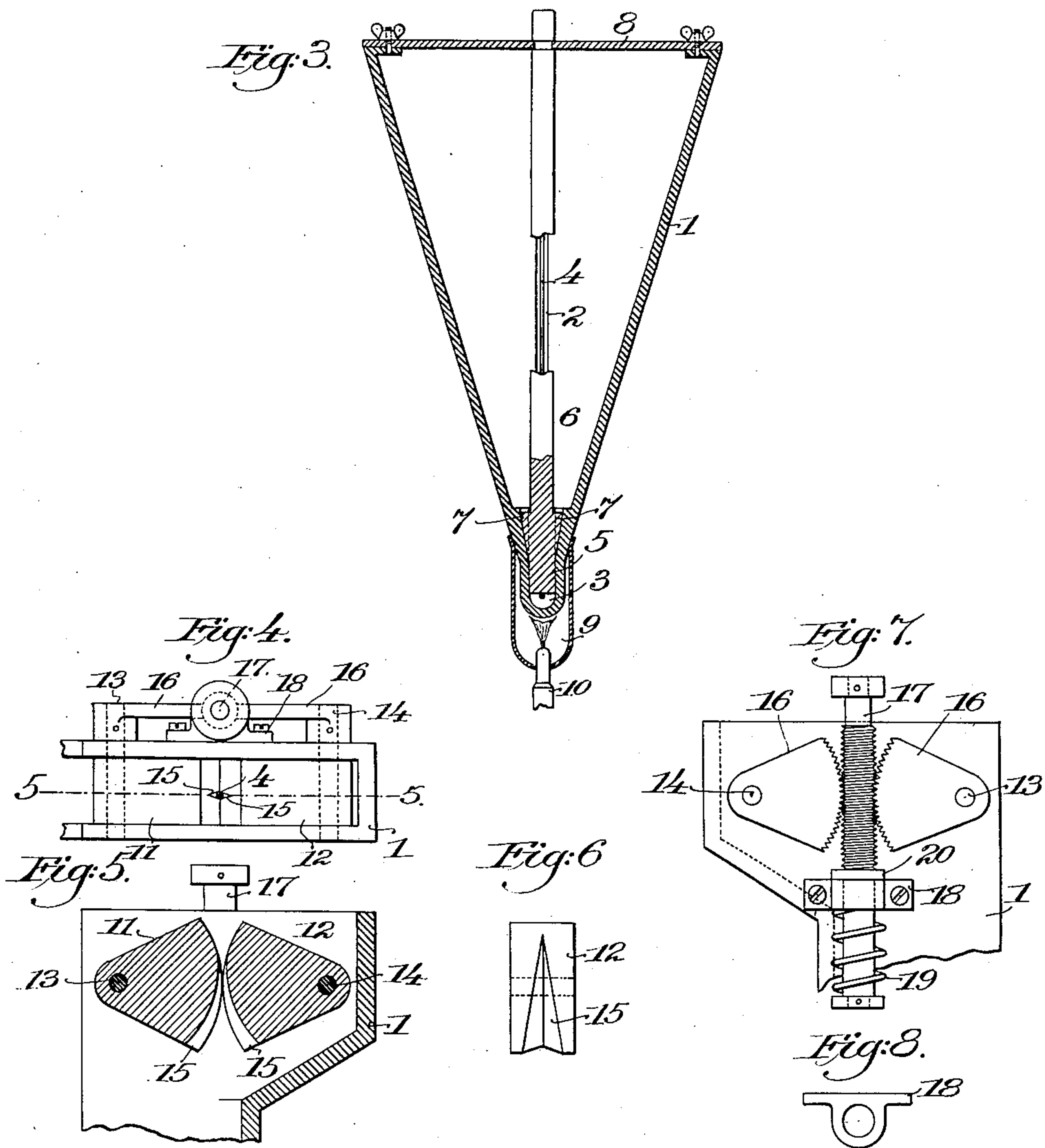
Witnesses:
 John F. C. Printz
 A. E. White

Inventor:
 Frederick L. Alley
 by his Attorney.
 Phillips Van Rensselaer & Fish

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UNITED STATES PATENT OFFICE.

FREDERICK LYMAN ALLEY, OF SYDNEY, NEW SOUTH WALES, AUSTRALIA, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

THREAD-WAXING DEVICE.

No. 930,115.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed July 23, 1902. Serial No. 116,673.

To all whom it may concern:

Be it known that I, FREDERICK L. ALLEY, citizen of the United States, residing at Sydney, New South Wales, Australia, have
5 invented certain new and useful Improvements in Thread-Waxing Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art
10 to which it appertains to make and use the same.

The present invention relates to thread-waxing devices for sewing machines and is intended as an improvement on the type of
15 thread-waxing devices disclosed in the patent to Holmes No. 564,883, dated July 28, 1896, and in my prior patent No. 583,968, dated June 8, 1897. The thread-waxing devices of these patents embody a supply reser-
20 voir and a thread-waxing chamber in the form of a tube through which the thread passes and into which the wax flows from the supply reservoir, only so much of the wax in the supply reservoir being kept in a
25 melted condition as is necessary to supply the waxing chamber. The advantages of this type of thread-waxing device are well understood by those skilled in the art and are referred to in the specifications of the
30 patents.

The present invention has for its object to improve the construction and mode of operation of thread-waxing devices of this type with a view to producing a device in
35 which the wax in the waxing chamber and a sufficient amount of wax in the supply reservoir to supply the waxing chamber can be more quickly heated and in which all danger of overheating or burning the wax is
40 avoided.

The present invention also has for its object to provide improved means for stripping the wax from the thread.

Other objects of the invention are in general to improve and simplify the construction of thread-waxing devices and render
45 them more efficient in operation.

With these objects in view, I have provided a thread-waxing device comprising a
50 supply reservoir and a tube through which the thread passes communicating therewith throughout a substantial portion of its length. By this construction the wax in the tube and in the adjacent portions of the res-

ervoir is quickly melted by heat applied to
55 the tube without melting the greater portion of the wax in the reservoir, the tube is supplied with wax along a substantial portion of its length so that all danger of the wax in the tube becoming exhausted is avoided,
60 and a circulation of wax between the tube and reservoir is permitted, the wax as it becomes heated escaping into the reservoir, and the cooler wax flowing into the tube to take its place whereby overheating and
65 burning of the wax is prevented.

The improved means for stripping the wax from the thread which I have provided consist of two strippers provided with a
70 thread groove which varies in size mounted so as to be moved by the pull of the thread when a knot or other inequality occurs in the thread to bring a larger portion of the thread groove into engagement with the
75 thread and thereby allow the knot or other inequality to pass through the groove. The strippers are held in position by means of a spring and are moved against the tension of the spring whenever a knot or other inequality in the thread passes through the
80 strippers. To adjust the strippers for operation upon different sizes of thread and to compensate for any enlargement of the thread groove on account of wear, means are provided for adjusting the strippers so as
85 to bring that portion of the groove which is of the desired size into engagement with the thread. My improved means for stripping the wax from the thread is equally applica-
90 ble to forms of thread-waxing devices other than my improved form hereinbefore referred to and accordingly I do not consider this feature of my invention to be limited to use in connection with any particular
95 form of thread-waxing device.

In addition to the novel constructions above referred to, my invention also consists in the devices and combinations of devices hereinafter described and claimed, the advantages of which will be obvious to those
100 skilled in the art.

A preferred form of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a
105 thread-waxing device embodying the same, the lower portion of the casing inclosing the wax tube being broken away; Fig. 2 is a

plan view of the device shown in Fig. 1, portions being shown in section on the lines 2—2 of Fig. 1; Fig. 3 is a transverse vertical section taken on the line 3—3 of Fig. 1; Fig. 4 is a detail plan view illustrating the strippers and their adjusting mechanism; Fig. 5 is a detail sectional view taken on the line 5—5 of Fig. 4; Fig. 6 is a face view of one of the strippers; Fig. 7 is a detail view looking in the opposite direction from Fig. 1 showing the adjusting mechanism for the strippers in side elevation, and Fig. 8 is a plan view of the guide for the adjusting rod of the mechanism for adjusting the strippers.

Referring to the drawings 1 indicates a wax pot which as viewed in side elevation is substantially V-shaped. The walls of this pot converge at the ends and bottom of the pot until they are separated by a narrow slot 2 and then diverge and finally meet below the slot, thereby forming the tube 3 extending from one end of the pot to the other beneath the same. The walls of the pot above the tube form a reservoir for supplying the tube with wax and the tube forms a chamber in communication with the reservoir throughout its length through which the thread 4 may be drawn. At the bottom of the pot the thread 4 passes under a thread guide 5 which as shown consists of a block provided with a curved lower face secured to or formed integral with the lower end of a rod 6. At the bottom of the pot the walls are thickened and are provided with a recess into which the thread guide 5 fits, the thread guide being provided with flanges 7 on each side which are received in slots formed in the sides of the recess as is clearly shown in Figs. 2 and 3. The upper end of the rod 6 is provided with a groove which is received in a slot formed in a supporting cross-bar 8 which extends transversely across the top of the pot and is secured at its ends by bolts and winged nuts to ears projecting inward from the sides of the pot. The thread guide 5 is thus rigidly secured in position but can be easily and quickly removed. Since the tube 3 is in communication with the supply reservoir formed by the walls of the pot throughout its entire length, the thread can be easily and quickly threaded through the tube by engaging the thread with the lower face of the thread guide and submerging the thread guide in the pot and securing it in position. The portions of the tube at each end of the pot are substantially straight so that by the use of a single thread guide 5 the thread is guided through substantially the central portion of the tube throughout its entire length. The tube extends at each end above the level of the wax so that no means for closing the ends of the tube to prevent the escape of the wax are required.

In order to heat the wax in the tube 3 a

casing 9 is provided which surrounds the tube and is secured to the walls of the pot. A chamber is thus formed between the tube and the casing which confines the heated air or gases. As shown in the drawings the heat is supplied by means of a gas jet 10 which projects through an opening in the lower portion of the casing 9. It will be evident, however, that if desired the casing 9 may be closed at both ends and connected with a source of steam supply. The heat in the chamber surrounding the tube 3 is applied directly to the tube and to the adjacent portion of the walls of the supply reservoir and thus the wax in the tube and the wax in the reservoir in the immediate vicinity of the tube is quickly melted. The wax flows into the tube through the slot 2 and the tube is thus supplied with wax throughout its entire length. In case the wax in the tube becomes overheated it rises through the slot 2 and the cooler wax in the reservoir flows into the tube to take its place and thereby all danger of overheating or burning the wax in the tube is avoided.

The improved strippers for stripping the wax from the thread which I have illustrated in the drawings, consist of two segmental shaped metal blocks 11 and 12 secured to pivot pins 13 and 14 journaled in the upwardly extending walls of the wax pot at one end of the pot above the delivery end of the tube 3. A groove 15 is formed in the face of each of the blocks 11 and 12 as is clearly shown in Figs. 5 and 6, each groove gradually increasing in size from the upper to the lower edge of the face of the block. The faces of the blocks are concentric with their pivot pins and roll upon each other, and the bottoms of the slots 15 are eccentric with the pivot pins so that as the blocks 11 and 12 are swung upon their pivots the size of the thread groove formed by the grooves of the blocks through which the thread passes is varied. Means are provided for adjusting the position of the blocks 11 and 12 to vary the size of the groove through which the thread passes to accommodate different sizes of thread and to compensate for any enlargement of the groove on account of wear. Means are also provided for yieldingly holding the blocks in position so that in case a knot or other inequality occurs in the thread the blocks will be allowed to move in a direction to enlarge the thread groove and allow the knot or other inequality to pass. As shown in the drawings, the means for adjusting the blocks and for holding them yieldingly in position is as follows:—A segmental shaped block 16 is secured to each of the pivot pins 13 and 14 and is provided with gear teeth with which a worm cut on a rod 17 meshes. This rod is journaled and guided in a bearing in the guiding block 18 secured to the

wall of the pot 1 and projects below the block 18. A coiled spring 19 surrounds the rod below the block 18 and is interposed between a shoulder at the lower end of the rod and the under surface of the block. The movement of the rod 17 under the force of the spring 19 is limited by a flange 20 on the rod which contacts with the upper surface of the block 18.

By the above-described construction, it will be seen that the position of the blocks 11 and 12 can be adjusted to increase or diminish the size of the groove through which the thread passes by rotating the rod 17 in one direction or the other and that the blocks 11 and 12 are yieldingly held in position by the spring 19 so that they are allowed to move in the direction to increase the size of the thread groove whenever a knot or other inequality passes through the groove.

It is to be understood that the construction illustrated in the drawings and above described by which a waxing device comprising a reservoir and a waxing tube in communication therewith throughout a substantial portion of its length is produced embodies this feature of my invention in its preferred form only and that while I consider the construction illustrated and described the best embodiment of this feature of my invention which I have been able to devise, as it possesses advantages in simplicity of construction and certainty and reliability of operation which will be obvious to those skilled in the art from the preceding description, my invention might be otherwise embodied without departure from the spirit thereof. It is also to be understood that while the specific form of strippers which I have illustrated in the drawings and above described embodies this feature of my invention in its preferred form, this feature of my invention is not limited, except as recited in the claims, to the specific construction and arrangement of parts shown.

Having thus indicated the nature and scope of my invention, and having specifically described a preferred embodiment thereof, I claim as new and desire to secure by Letters Patent of the United States.

1. A thread waxing device, having, in combination, a reservoir, a tube through which the thread passes located outside of, on the sides, and beneath the reservoir and communicating therewith throughout a substantial portion of its length and means for heating the tube to melt the wax in the tube and in the adjacent portions of the reservoir to allow a circulation of wax between the tube and the reservoir, substantially as described.

2. A thread waxing device, having, in combination, a substantially V-shaped reser-

voir, a tube through which the thread passes extending from one end of the reservoir to the other beneath the same in the shape of a V and communicating therewith throughout a substantial portion of its length and a removable thread guide located at the bottom of the reservoir, substantially as described.

3. A thread waxing device, comprising a wax pot the walls of which converge at the ends and bottom of the pot until separated by a narrow slot and then diverge and finally meet below the slot to form a tube extending from one end of the pot to the other beneath the same, substantially as described.

4. A thread waxing device comprising a wax pot, a tube through which the thread passes located outside of, on the sides and beneath the pot, the walls of the pot converging toward the tube and the tube communicating with the pot throughout a substantial portion of its length to allow a circulation of wax between the tube and the reservoir, substantially as described.

5. In a thread waxing device, a pair of segmental, pivotally mounted strippers provided with grooves cooperating to form a thread groove of varying size, and means for adjusting the strippers to bring the desired portion of the groove into engagement with the thread, substantially as described.

6. In a thread waxing device, a pair of segmental, pivotally mounted strippers provided with grooves cooperating to form a thread groove of varying size, means for adjusting the strippers to bring the desired portion of the groove into engagement with the thread and means for yieldingly holding the strippers in their adjusted position, substantially as described.

7. In a thread waxing device, a pair of segmental pivotally mounted strippers provided with grooves cooperating to form a thread groove of varying size and means for yieldingly holding the strippers in position, substantially as described.

8. A thread waxing device, comprising a reservoir, and a tube through which the thread passes located outside of, on the sides and beneath the reservoir and communicating therewith through a narrow slot extending throughout a substantial portion of its length, substantially as described.

9. A thread waxing device, comprising a reservoir, a tube through which the thread passes located outside of the reservoir and communicating therewith throughout a substantial portion of its length, and a casing surrounding the tube and forming a heating chamber therefor, substantially as described.

10. A thread waxing device, comprising a wax pot, a tube through which the thread passes located outside of and beneath the pot and communicating therewith throughout a substantial portion of its length, the walls of the pot converging toward the tube, and the

walls of the tube first diverging and then converging beneath the pot, substantially as described.

11. A thread waxing device, having, in combination, a reservoir, a tube through which the thread passes, extending beneath the reservoir, said tube communicating with the reservoir throughout a substantial portion of its length to allow a circulation of wax between the tube and reservoir and extending at each end above the level of the wax, and a casing surrounding the tube and forming the heating chamber therefor, substantially as described.

12. In a thread waxing device a pair of segmental pivotally mounted strippers provided with grooves cooperating to form a thread groove of varying size, gears connected to the strippers, an adjusting worm meshing with the gears and a spring acting on the worm, substantially as described.

13. A thread waxing device comprising a reservoir provided with an elongated con-

tracted portion at the sides and bottom, and an elongated enlargement below said contracted portion at the bottom provided with a tubular thread passage and communicating throughout its length with the body of the reservoir through a narrow opening through said contracted portion, substantially as described.

14. A thread waxing device comprising a reservoir and a tube through which the thread passes located outside of and beneath the reservoir, and communicating therewith through a narrow slot extending throughout a substantial portion of its length and a removable thread guide located at the bottom of the reservoir substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

FREDERICK LYMAN ALLEY.

Witnesses:

CHARLES EDWARD GRAHAM,
ROBERT CHARLES DEMPSEY.