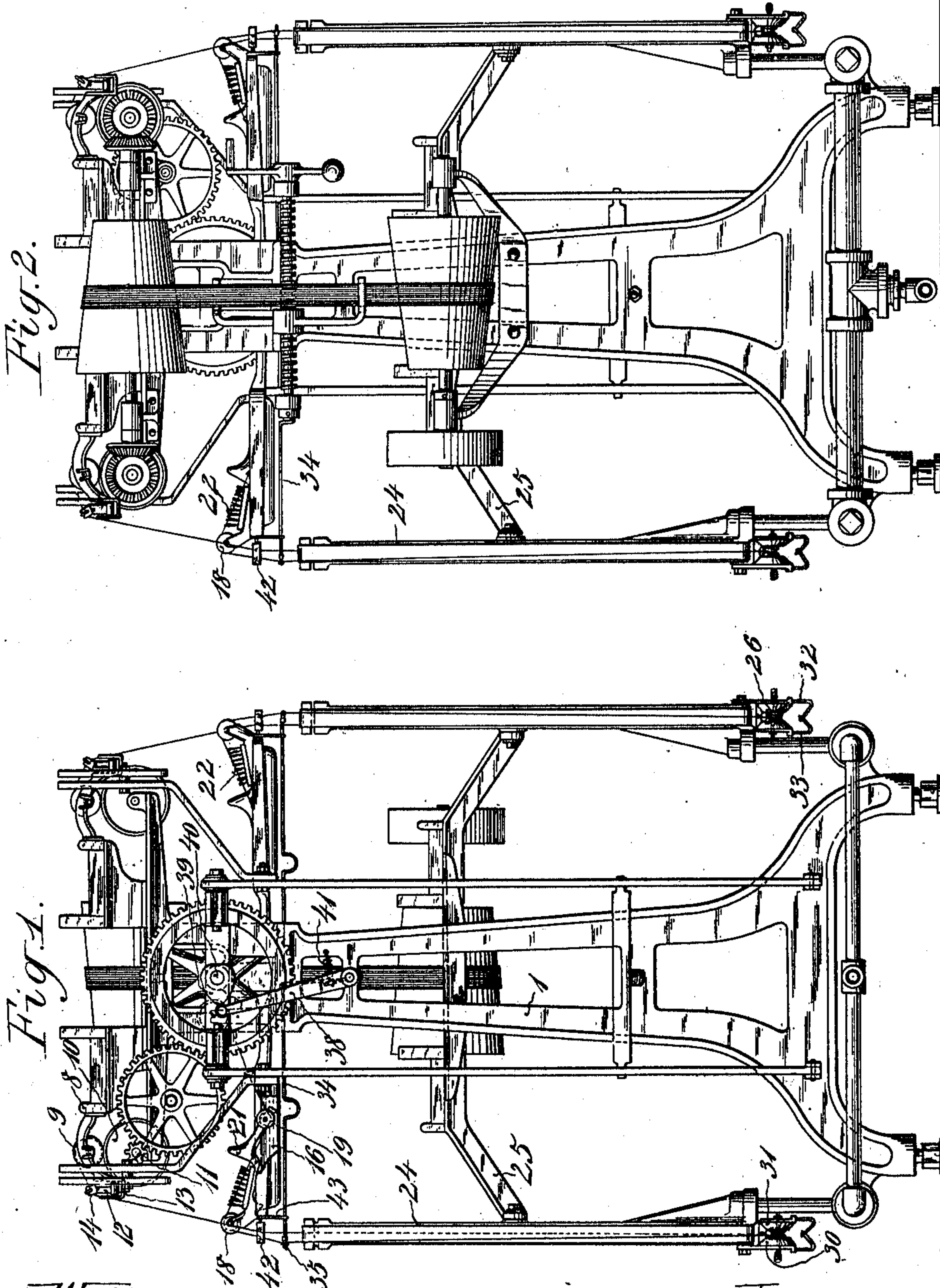


W. C. KEYWORTH.
 THREAD FINISHING MACHINE.
 APPLICATION FILED JULY 18, 1908.

989,983.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.



Witnesses:
 M. G. Putnam
 J. George Bony

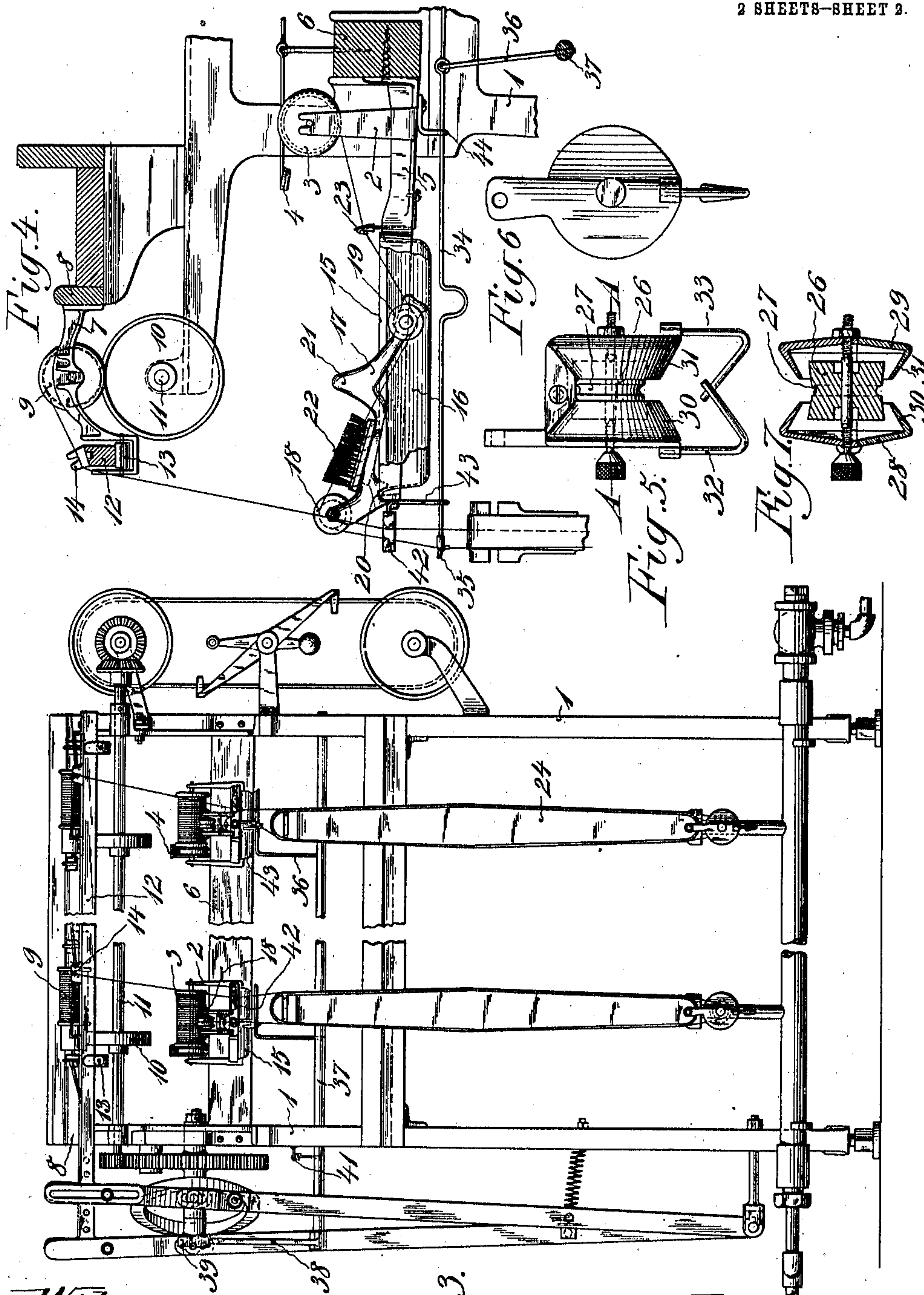
Inventor
 William C. Keyworth
 by attorneys
 Brown & Shuman

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Witnesses:
 A. G. G. G.
 J. George Barry.

Fig. 3.

Inventor:
 William C. Keyworth
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UNITED STATES PATENT OFFICE.

WILLIAM C. KEYWORTH, OF PATERSON, NEW JERSEY.

THREAD-FINISHING MACHINE.

989,983.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed July 13, 1908. Serial No. 443,282.

To all whom it may concern:

Be it known that I, WILLIAM C. KEYWORTH, a citizen of the United States, and resident of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Thread-Finishing Machines, of which the following is a specification.

This invention consists in certain novel features in the construction, form and arrangement of the several parts of a thread finishing machine, such, for instance, as a silk thread finishing machine, whereby the individual treatment of the threads is facilitated and in which a more complete and even lustering of the threads is insured.

The object of this invention is also to so locate the several parts of the machine as to permit a very convenient handling of the individual threads.

This invention consists in improvements on the machine for winding, lustering and finishing silk, etc., upon which United States Letters Patent No. 872,734 dated December 3, 1907 were issued to me and upon which an application for United States Letters Patent was made by me September 17, 1907, Serial No. 393,373.

A practical embodiment of my invention is represented in the accompanying drawings in which—

Figure 1 represents my improved silk thread finishing machine in elevation looking toward one end of the machine, Fig. 2 is a similar view looking toward the other end of the machine, Fig. 3 is a view in side elevation of the machine, with a portion intermediate its ends broken away, Fig. 4 is an enlarged detail section illustrating more fully the thread delivery mechanism, the thread winding mechanism, the thread moistening mechanism and a portion of the thread heating mechanism, Fig. 5 is an enlarged detail side view of the pulley at the bottom of each heater around which the thread is passed, Fig. 6 is an end view of the same, and Fig. 7 is a central section through the said pulley, taken in the plane of the line A—A of Fig. 5.

The main frame of the machine is denoted by 1. Each thread delivery mechanism comprises a support 2 for the thread delivery spool or bobbin 3, which is held under the required frictional tension by the arm 4. This support 2 uprises from a bracket 5 secured to one of the longitudinal beams 6 of the main frame 1.

Each thread winding mechanism comprises a bracket 7 secured to one of the longitudinal beams 8 of the main frame of the machine, which bracket carries the winding spool or bobbin 9 driven by the drum 10 on the rotary shaft 11. A transverse bar 12 is supported on antifriction rollers 13 in the bracket 7 and is provided with the usual thread guides 14 for guiding the thread on to its spool or bobbin.

Each thread moistening mechanism comprises a basin 15 carried by the bracket 5, which basin is adapted to contain the thread dressing liquid 16. A holder 17 is provided at its outer and inner ends with pulleys 18, 19, the pulley 19 being immersed within the liquid 16. This holder is provided with a recess 20 near its outer end for receiving the lip of the basin 15 so that the holder is removably supported by its inner end resting upon the bottom of the basin 15 and its outer end supported upon the lip of the basin. A suitable handle 21 is provided for facilitating the insertion and removal of the holder. A brush 22 is mounted on the holder 17 between the outer pulley 18 and the handle 21, exterior to the dressing liquid, which brush serves to remove the superfluous moisture from the thread as it leaves its liquid bath. A stationary guide eye 23 is secured to the bracket 5 in position to direct the thread from its delivery spool or bobbin 3 to the thread immersing pulley 19 on the holder 17.

Individual heating surfaces are provided for the threads as follows: A vertically arranged heater 24 is supported from the main frame by a bracket 25, the thread engaging surfaces of the said heater being arranged in substantially vertical planes transverse to the machine. The heater is herein shown as adapted to be heated by steam but it is to be understood that it may be heated in any other manner desired.

A pulley 26 is mounted at the bottom of each of the heaters 24, which pulley is provided with a groove 27 within which the thread is located as it passes around the pulley from one of the transverse heating surfaces to the other of the transverse heating surfaces of the heater. Conical oppositely arranged shells 28, 29, are provided with oppositely inclined conical walls 30, 31, ranged to direct the thread into its groove 27 in the pulley 26. Crossed retaining arms 32, 33, are secured to the shells 28, 29, in position to prevent the escape of the thread

when it becomes broken or when it becomes loosened to too great an extent. Each thread is rolled upon one of the transverse surfaces of its heater for insuring a complete and even lustering of the thread. The device for accomplishing this result comprises a transversely reciprocating bar 34 having an eye 35 through which the thread passes before it reaches the heater. This bar 34 is connected to one end of a rock arm 36 fixed to a longitudinally arranged rock shaft 37. This rock shaft 37 is provided with an arm 38 engaged by a cam 39 on one of the shafts 40 of the machine. A spring 41 holds the arm 38 in engagement with the face of the cam 39. It is to be understood that all of these bars 34 are connected to the rock shaft 37.

A guide 42 is provided for each of the threads, which guide is fixed to the basin 15. The thread passes through this guide after it leaves the pulley 18 and also passes there-through as it leaves the heater on its way to the winding mechanism.

The bar 34 is supported by a depending loop or shank 43 of the guide 42 and a lip 44 secured to the bracket 5.

It will be seen that by the construction, form and arrangement of the parts as herein set forth, I am enabled to place the thread winding mechanism above the thread moistening mechanism and in position to permit the ready removal and replacement of the winding spools or bobbins. It will also be seen that the holder for the immersing pulley, the brush and the guide pulley for the thread may be readily removed without affecting the other parts of the machine in any particular.

What I claim is:

1. In a thread finishing machine, a plurality of delivery mechanisms, a plurality of moistening mechanisms arranged in front of the delivery mechanisms, a plurality of heating mechanisms arranged below the delivery and moistening mechanisms, a plurality of winding mechanisms arranged above the delivery, moistening and heating mechanisms and means for directing threads from the delivery mechanisms through the moistening mechanisms, thence back and forth along the heating mechanisms and

thence to the winding mechanisms, whereby ready access to the several parts may be had without interfering with other parts and whereby the thread after leaving the heating mechanisms may be allowed time to further air and dry before reaching the winding mechanisms.

2. In a thread finishing machine, a moistening mechanism comprising a basin for containing the liquid bath for the thread, a holder removably supported with one end on the rim of the basin and its opposite end on the bottom of the basin, whereby the holder is given a general tilted position downwardly toward the bottom of the basin, said holder being provided with two pulleys and an interposed brush, one of the pulleys being immersed in the liquid bath and the other pulley located exterior thereto, and means for directing a thread to and from said pulleys.

3. In a thread finishing machine, a moistening mechanism comprising a basin for containing the liquid bath for the thread and a holder removably supported in an inclined position on the basin, said holder being provided with two pulleys, an interposed brush and a handle for removing the holder, one of the pulleys being immersed in the liquid bath and the other located exterior thereto, and means for directing a thread to and from the pulleys.

4. In a thread finishing machine, a moistening mechanism comprising a basin for containing the liquid bath for the thread, and a holder removably supported in an inclined position on the basin, said holder being provided with two pulleys, one pulley being immersed in and the other pulley located exterior to the liquid bath, the said pulleys being free to receive a thread under the one and over the other by simply manipulating the holder.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this thirtieth day of June 1908.

WILLIAM C. KEYWORTH.

Witnesses:

JOHN KEYS,
JOSEPH McMANN.