

T. Kohn.

Finishing Silk.

N^o 49, 280.

Patented Aug. 8, 1865.

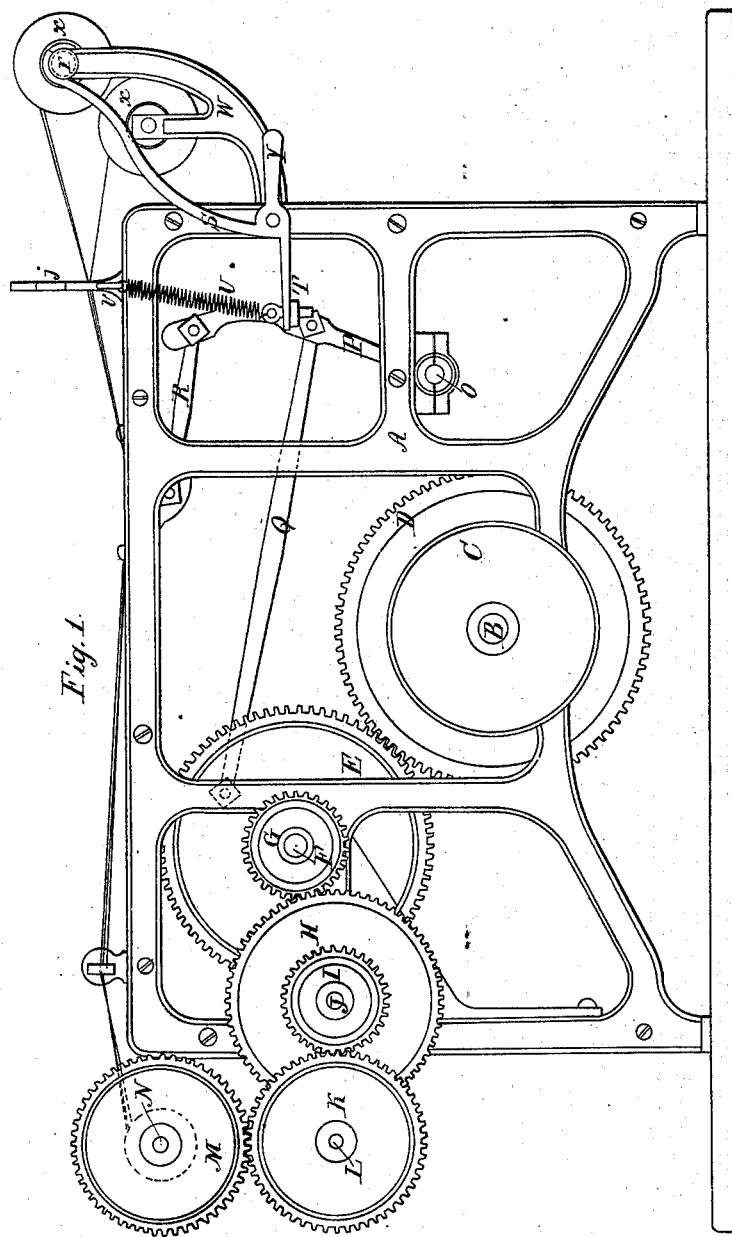


Fig. 1.

Witnesses
Geo. Lusk
Wm. Freun

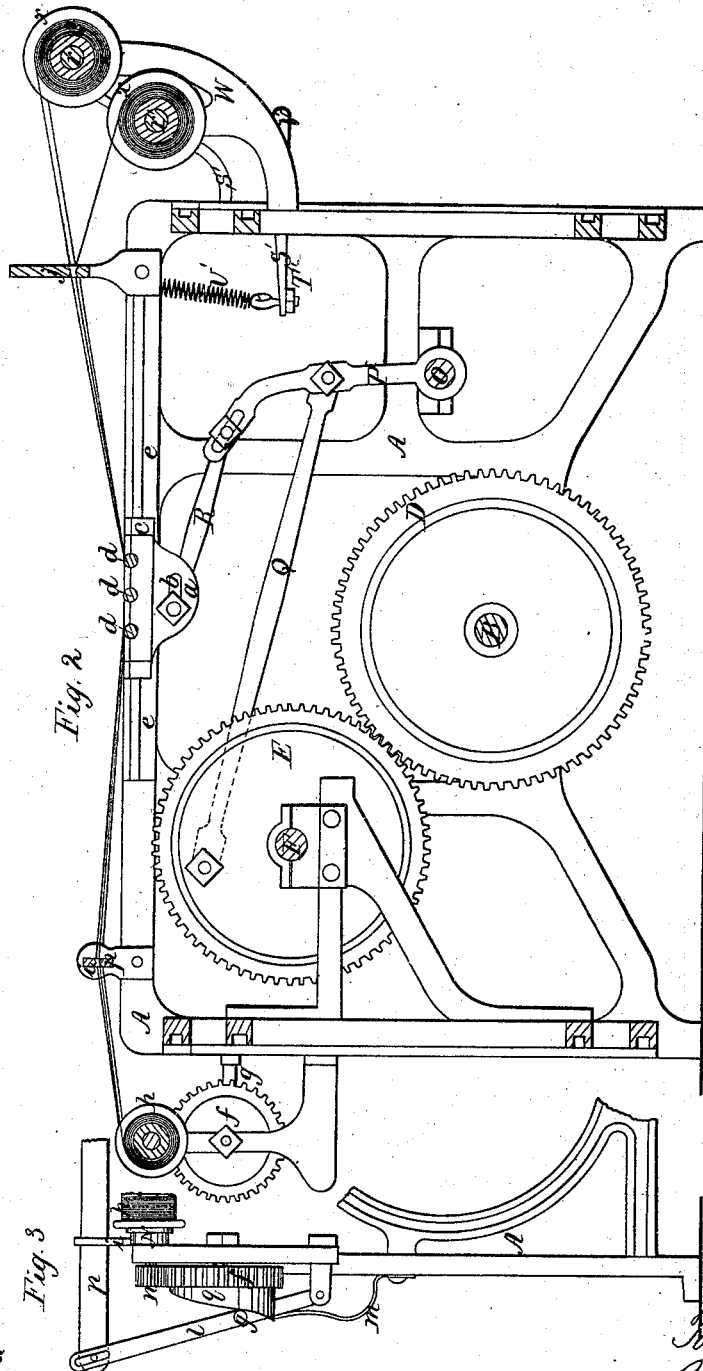
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Witnesses
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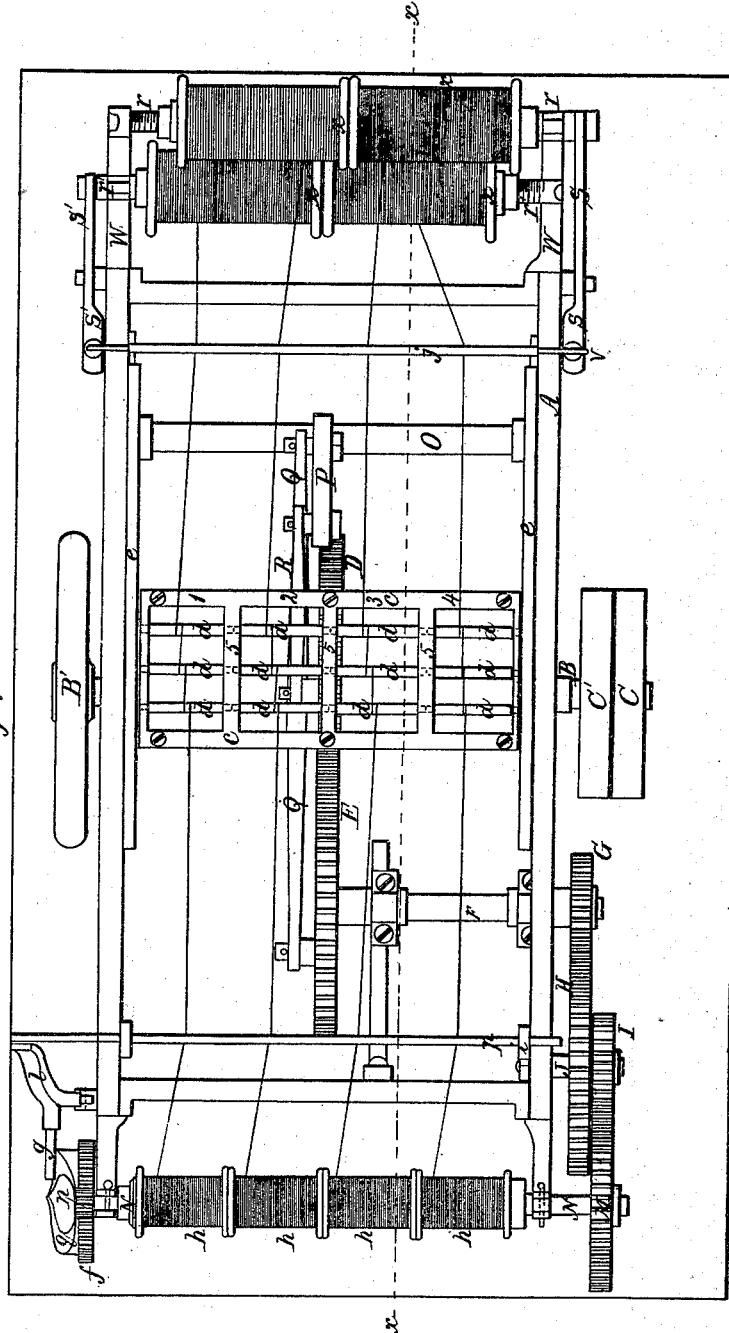
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Fig. 4



Witnesses
Geo. Fusch
Wm. Freuin

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UNITED STATES PATENT OFFICE.

TOBIAS KOHN, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR CLEANING AND FINISHING SILK AND OTHER THREADS.

Specification forming part of Letters Patent No. **49,280**, dated August 8, 1865.

To all whom it may concern:

Be it known that I, TOBIAS KOHN, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Machines for Cleaning and Finishing Silk Thread and other Articles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My improvements are represented in the accompanying drawings, consisting of three sheets.

Figure 1, Sheet 1, represents a side elevation of my improved machine. Fig. 2, Sheet 2, is an elevation of a longitudinal section taken on the line *x* of Fig. 4. Fig. 3, Sheet 2, is an elevation of a portion of one end of the machine. Fig. 4, Sheet 3, is a plan view.

Similar letters of reference indicate like parts.

The object of this invention is to clean and finish silk thread after it has been spun, and other articles made of silk, such as twist, cord, and braid, and also thread, cord, and other articles made of cotton, linen, worsted, or other fibrous materials. It supersedes the process of cleaning such articles by means of knives or sharp-edged bodies, and by means of passing them over a flame, as commonly practiced.

My invention consists, among other things, of a new process of cleaning such articles by means of frictional contact with metallic or other suitable surfaces.

A designates the frame of the machine by which I propose to illustrate my invention.

B is the main shaft, carrying at one end a driving-pulley, C, and a loose pulley, C', and at the other end a balance-wheel, B'.

D is a large gear-wheel, fixed on the shaft B within said frame, and engaging with a gear, E, fixed on the inner end of a short shaft, F, whose outer end passes without the frame, and carries a pinion, G, which drives the train of gearing through which motion is imparted to the spool-shaft N. This train of gearing is designated by the letters H, I, K, and M, fixed respectively on the shafts J, L, and N, the shafts J and L being short shafts fixed in the adjacent side of the frame A. The spool-shaft N extends across the back part of the frame, and

carries on the end opposite the gear M a small pinion, *n*, by which motion is given to a gear-wheel, *f*, that revolves on a shaft projecting from the frame A. The outer face of the gear-wheel *f* is provided with a cam, *q*, by which the guiding-bar *p* on the top of the frame is reciprocated through the vibrating arm *l* and its finger *g*. A spring, *m*, presses constantly against the arm *l* in order to keep its finger upon the cam.

The guiding-bar *p* is connected to the arm *l* by means of a pin extending from the end of the bar into a slot made in the arm, so that the latter may have free play on the pin during its vibrations. The guiding-bar is pierced with as many holes as there are spools *h* on the spool-shaft. The reciprocations of this bar are required in order to lay the finished thread in regular courses and evenly upon the spools.

The gear-wheel E has a crank which carries a connecting-rod, Q, whose other end is connected to a pin upon the side of a vibrating arm, P, whose lower end is fixed to a rock-shaft, O, supported in the sides of the frame, and whose upper end is connected to one end of a short connecting-rod, R, whose other end is fixed by a bolt and nut to the lug *a* of the cleaner *c*. Its connection with said lug is capable of being made adjustable by reason of the elongated slot *b*, and the upper end of the vibrating arm P is also slotted, so that the connection of the rod R with it is also adjustable. The extent of motion to be given to the cleaner can by this means be adjusted as required.

The cleaner *c* is a frame reaching across the top of the frame A, and fitted to slide back and forth in ways *e e* in the top rails of said frame A. The cleaner here shown is made in four divisions, 1, 2, 3, and 4, each of which has a series of spindles, *d*, the number of which may be two or more in each division. I have shown three spindles in each division, because that number produces satisfactory results in cleaning and finishing silk thread and other articles. The divisions are separated from each other by bars 5, which, with the ends of the frame of the cleaner, furnish bearings for the journals of the spindles. The spindles run loosely in their bearings, so that they may be easily revolved by means of the thread or other article to be cleaned, and which is wound around them, as seen in the drawings.

The letter *j* designates a stationary bar ex-

tending across the top of the frame A near its right-hand end, which bar is pierced with as many holes as there are bobbins x on that end of the machine. These bobbins x are supported on spindles $r r'$, which revolve in bearings formed on the branches of brackets W, extending from the right-hand end of the machine. The bobbins x are secured upon the spindles $r r'$ by tightening-nuts in the usual way, and the delivery of the thread or other article therefrom is regulated by means of friction-brakes, one for each spindle $r r'$, on the upper ends of levers S S', which are fixed on opposite sides of the frame A, and whose shorter ends are held up by means of springs U U', depending from eyes, V, which project beyond the top of the frame A, said springs being adjustably connected to the levers S S' by means of screw-bolts and nuts T T', so that the pressure on the spindles $r r'$ may be varied at pleasure.

The operation of the machine is as follows: The bobbins containing the silk thread or other article to be cleaned are fixed upon the spindles $r r'$, and their threads, if they contain thread, are passed through the appropriate holes in the stationary bar j , which holes are so placed as that each is opposite the middle of one of the divisions of the cleaner. The threads are thence conducted to their appropriate divisions of the cleaner and wound around each spindle therein, as shown in the drawings, and are taken thence through their appropriate holes in the reciprocating bar p , and thence to the spools h . Motion being now given to the shaft B, the spool shaft or spindle N will be rotated, and the threads will be drawn from off the bobbins x and wound upon the spools h with more or less speed, according to the relative sizes of the geared wheels which drive their spindle. While the thread is passing over to the spools h the cleaner is reciprocated in its ways $e e$, and its spindles d are driven back with great rapidity to and fro along the threads which are moved about them, thereby subjecting the threads to an energetic rubbing action several times repeated over every part of the threads, according to the speed with which they are wound up. As the spindles run through the loops of the thread they are made to revolve, and thus the strain on the threads is less than if the loops of the threads were passed about stationary bodies.

The effect produced by treating the threads according to this method is to remove the fuzz and loose threads and all adhering dirt and other foreign substances, and to take out kinks produced by uneven twisting. The thread is also softened thereby, and it is made brighter in appearance.

In cleaning thread and other articles after the usual method—by knives or other sharp-edged instruments—much waste is made, partly occasioned by the necessity that exists for taking out weak and uneven portions of the strands which have been too much frayed by the instruments. When such parts are taken out the divided thread is reunited by tying, thereby producing a knot in the strand. Much of this waste is prevented in my method. According to the common method, also, the thread or other article is often weakened by the strain put on it in order to even the twist and make the strand uniform, and sometimes it is passed over a flame in order to burn off the fuzz, and sometimes the fuzz is left remaining on it. After going through these processes of cleaning and burning and stretching in the case of thread and other articles of silk it is next dyed. But I am enabled by my process and manner of treating thread and other articles of silk to dye them before cleaning and finishing them. The cleaners are placed horizontally in this example; but they may be placed in vertical or in inclined positions without altering the principle involved in my invention, and they may be disconnected at one end, instead of having both ends resting in bearings.

The series of cleaning-spindles, and consequently the number of bobbins in a machine, may be increased with its size; and I have found that a machine with eight series or divisions of cleaning spindles will do the work of about fifty operatives, each series cleaning and finishing about one pound of fine silk a day.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination and arrangement of the rollers d , rotary shaft N, reciprocating guide-bar p , slotted arm l , pin g , and cam q , as and for the object specified.

TOBIAS KOHN.

Witnesses:

ORRA B. BAILEY,
THOMAS McMANUS.