O. & G. HALL.

THREAD DRESSING MACHINE.

No 30,814. Patented Dec 4, 1860.

Fig. 1.

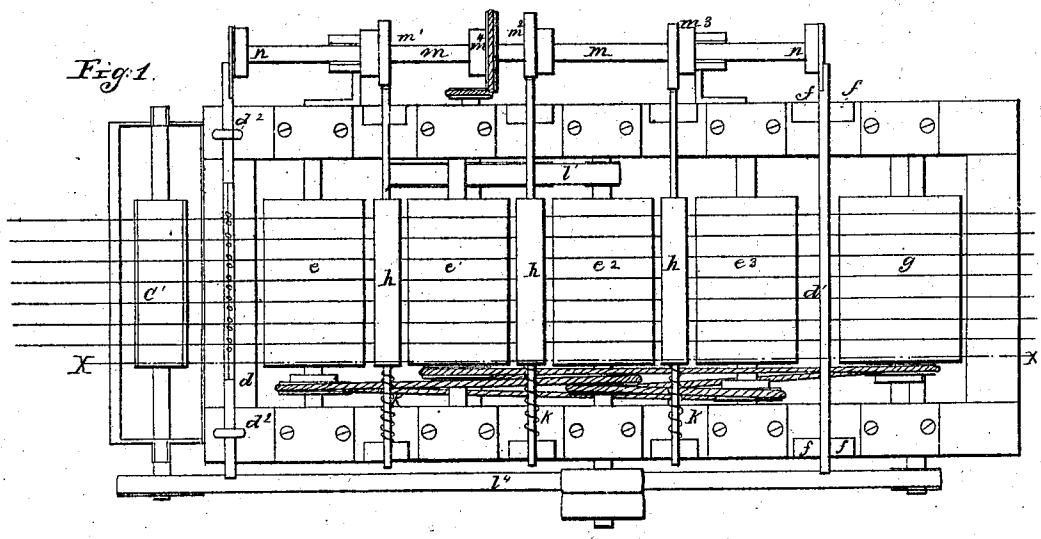


Fig. 2.

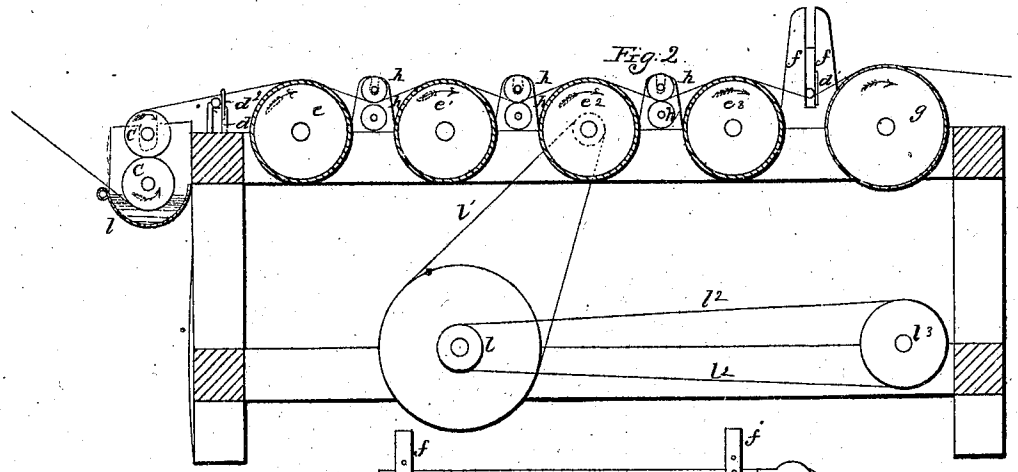
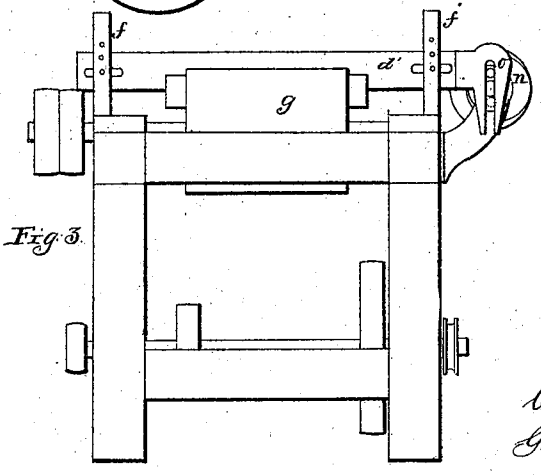


Fig. 4.



Fig. 3.



WITNESSES:

Hezekiah Conant

Egbert Hall

INVENTORS

Origin Hall

Gardner Hall

UNITED STATES PATENT OFFICE.

ORIGIN HALL AND G. HALL, OF WILLINGTON, CONNECTICUT.

MACHINE FOR DRESSING THREAD.

Specification of Letters Patent No. 30,814, dated December 4, 1860.

To all whom it may concern:

Be it known that we, ORIGIN HALL and GARDINER HALL, of Willington, county of Tolland, in the State of Connecticut, have invented certain new and useful Improvements in Machinery for Dressing Sewing-Cotton and other Similar Articles, and that the following, taken in connection with the drawings, is a full, clear, and exact description thereof.

In the drawings Figure 1 is a plan of the machine. Fig. 2 is a longitudinal section through the same on the line X, X, of Fig. 1. Fig. 3 is an end elevation thereof and Fig. 4 is a detail drawing of an eccentric or cam.

In our machine as in some other for sizing and polishing thread, the threads are not dressed while in a hank or skein, but each length of thread is first wound upon a bobbin, then as it is unwound passes under the surface of size contained in a vat, is afterward polished by rotating cylinders, covered with felt, or by rotating brushes and is finally dried over a heater and then rewound upon another bobbin, and our improvement consists in combining with rotating felt covered cylinders or revolving brushes or their equivalents for polishing sized thread an apparatus for giving to the threads which pass through the machine a traversing motion, or apparatus which gives to the threads a combined traversing and rolling motion, the traversing motion being in both cases crosswise of the polishers and produced substantially in the manner hereinafter described.

In the drawing a strong frame on which all parts of the machine are supported and assembled together is represented at *a a a*. On the front end of the frame is mounted a size vat *b*, in which is fitted, supported upon proper journals a depressing and indrawing roller such as *c*. The supports for the shaft of this roller are formed in an upward extension of the sides of the vat, and these sides above the roller are slotted vertically so as to confine in place the journals of a squeezing roller *c'* which rests upon the former roller or the thread passing between the two and is free to rise and fall and is moved by friction only. Next behind these rollers lies a vibrator or traverser *d* free to slide crosswise of the frame and guided by staples such as d^2. On the upper edge of this traverser or vibrator are guide-pins or notches or some similar contrivance which confine the threads so as to cause them to partake of the motions of the traverser. Behind this traverser is a polishing cylinder *e* covered with felt or with brushes such as are now in common use in thread dressing machines. Other polishing cylinders e' e^2 e^3 in proper supports are arranged at proper intervals along the frame, and all these cylinders are caused to revolve rapidly in the direction indicated by arrows by means of a single endless cord as shown in the drawings, or by any other proper appliances.

Behind the last polishing cylinder lies another vibrator, supported in guides upon pins which pass through slots in the vibrator. These pins pass through holes in the standards *f* and by altering their positions the vibrator may be adjusted at various heights. This last vibrator has notches on its lower edge which force the threads passing under it to follow its vibrations. Behind this last vibrator is a drying cylinder *g* caused to revolve in any convenient manner as by a belt connecting with pulleys on the polishing cylinders; this cylinder is metallic and hollow and is to be heated in any of the ways well known to machinists applicable to the heating of rotating cylinders.

Between the polishing cylinders are arranged pairs of small rollers *h h* supported in journals mounted in the frame, all of them are free to revolve and the upper roller of each pair rests upon the lower or upon thread passing between them and is free to rise and fall, and is forced to slide endwise across the frame. Each upper roller is pressed toward one side of the frame by a spiral spring embracing its shaft (clearly shown at *k k k* Fig. 1) and abutting both against the roller and the standard which confines its shaft.

In the lower part of the frame lies a shaft *l* carrying three pulleys. The larger of these is embraced by a belt *l'* which also surrounds a small pulley on the shaft of e^2; this polishing brush or cylinder will therefore revolve when the shaft *l* revolves, and all the other polishing cylinders may receive motion from this one through the intervention of a single endless cord as indicated in the drawings. The shaft *l* by

means of another pulley and a belt l^2 moves a shaft l^3 which by means of a cross belt l^4 drives the indrawing roller *c*.

On one side of the frame and perpendicular to the axes of the polishing cylinders is supported a shaft *m* on which is mounted a pulley m^4 and this shaft receives motion from the main shaft *l* by means of a cord passing around the last named pulley and the outermost pulley on shaft *l*.

On the shaft *m* are secured eccentrics m' m^2 m^3 each opposite a shaft of one of the upper of the pairs of small rollers. The ends of these shafts are held in contact with the surfaces of the eccentrics by the springs *k k k*.

Two disks *n n* are secured to the ends of the longitudinal shaft *m* and each disk carries a crank pin such as *o* which enters a vertical slot (see Fig. 3) cut in the end of each vibrator or traverser.

When power is applied to the driving pulley, all the polishing cylinders, the dying cylinders, and the indrawing roller, will revolve, so also will the shaft *m*, and this latter through the agency of the eccentrics and springs and the crank pins will cause the upper roller of each pair of small rollers and the traverses or vibrators, to vibrate slowly across the frame; and we wish it distinctly understool, that all these and all other parts of the machine may receive motion in any other appropriate manner so long as the surfaces which act upon the thread have substantially such motions as are described.

When the machine is in operation a number of threads pass each off of its own spool or bobbin through the machine, each thread travels by itself apart from the others as indicated by red lines on the drawing, and all the threads are when seized polished and dried wound upon other bobbins.

Before commencing to work the size vat is to be filled with size and the drying cylinder is to be heated, the machine is then to be put in motion, and thread will then be drawn off the bobbins by the indrawing roller, immersed under the size and have the surplus squeezed off by passing under the squeezing roler, will be polished as it passes in contact with the rapidly revolving polishing cylinders, and dried over the drying cylinder and may be exposed in its passage to the action of a greater or less portion of the surface of the latter by adjusting the height of the last traverser. All the threads as they pass out of the machine are to be wound upon bobbins or reels forced to revolve by any appropriate agency in a manner well known to makers of spool thread, and the thread is drawn through the machine by these revolving bobbins or reels.

During its passage through the machine each thread will be continually traversed or shifted sidewise from line to line and back again over the various polishing cylinders by the automatic traversing motion of the vibrators; each thread will also be traversed and rolled over and over back and forth by the endwise motion of the upper of each pair of the small rollers, which should be very light and are caused to evolve by the friction of the advancing thread which passes over the lower and under the upper roller of each pair. This traversing motion of the thread is of great importance, as it brings successively into action each part of every polishing cylinder or rotating brush causing them to wear equally and giving them an opportunity to become dry or at any rate preventing them from clogging up so quickly with moisture as they would do if the threads passed always on the same lines over their surfaces. This traversing motion moreover takes off any dirt or dust that may settle upon the polishing in small portions at a time, so that the thread does not become so dirty in spots as to be spoiled, an event which often happens in machines without any traversing motion, for in them the dirt settles on the unused portions of the cylinders and when a thread accidentally leaves its track, it comes in contact with the dust and a long length of it is often spoiled.

The combined rolling and traversing motion is also advantageous, as the rolling over of the thread exposes every part of its circumference to the action of the polishers causing it to be acted upon with certainty over its whole surface so that an even and regular polish is secured. The traversing motion derived from the vibrators may be used alone with good effects and the same is true of the combined traversing and rolling motion produced by the small rollers, and either or both of them are useful in all machines for polishing thread in which the thread is unwound from bobbins or reels or spools is then passed through the machine singly and is again wound upon spools or reels or their equivalents, and we intend to use our transversing apparatus or combined rolling and traversing apparatus or both of them in combination with polishing cylinders or their equivalents in such machines whether the rotating polishers be few or many and whether the drying cylinder be used or dispensed with, and we wish it to be distinctly understood that we consider revolving feet clothed cylinders, rapidly rotating brushes, and rotary beaters whose peripheries or acting surfaces are composed of polishing rods of metal or glass as equivalents each for the other when combined with the traversing and rolling or traversing apparatus herein described. We are moreover aware of the fact that a method of traversing hanks or skeins of

thread is described in an English patent granted to L. C. Koeffler in 1854 No. 238 but that machine is one in which the thread is acted upon while in skeins or hanks, and we believe it would be impossible to traverse the hanks in that machine when sufficiently stretched to be polished but in any event that machine would not answer our purpose as we desire to roll and traverse, or traverse each thread singly and by itself. We therefore do not claim broadly a traversing apparatus in a machine for dressing thread, but

We do claim as of our own invention—

1. An automatic apparatus substantially such as is herein described for traversing thread in combination with rotating polishing felt clothed cylinders or their equivalents and with a size vat when so arranged substantially as specified that each thread passes singly over the polishers so that threads may be sized traversed and polished substantially in the manner described.

2. We claim in combination with a size vat and with rotating polishers substantially such as herein described an automatic apparatus substantially such as is herein specified for imparting to threads a combined traversing and rolling motion.

3. We claim in combination with rotary polishers substantially such as herein described a combined apparatus substantially such as is herein described one part of which gives to the thread a traversing motion and the other part of which imparts to the thread a combined rolling and traversing motion substantially in the manner specified.

In testimony whereof we have hereunto subscribed our names on this fourth day of October A. D. 1860.

ORIGIN HALL.
GARDINER HALL.

In presence of—
HEZEKIAH CONEURT,
PHILIP BORROWS.