No. 798,276. PATENTED AUG. 29, 1905.

G. A. FREDENBURGH.

THREAD DRESSING MACHINE.

APPLICATION FILED JULY 25, 1904.

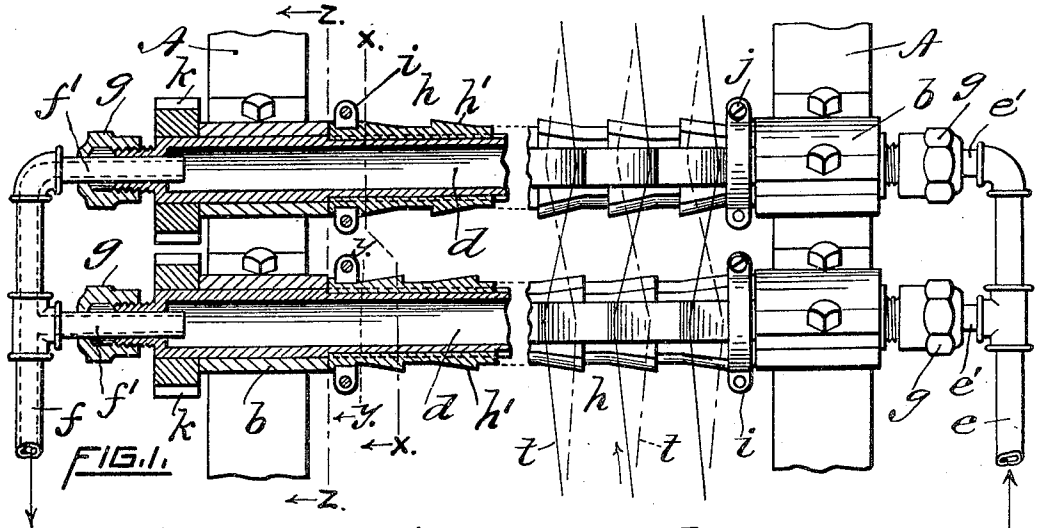


FIG. 1.

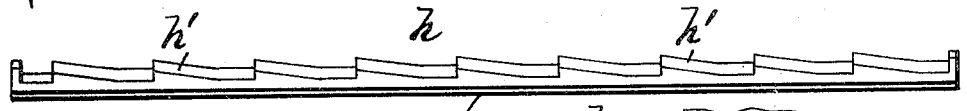


FIG. 4.

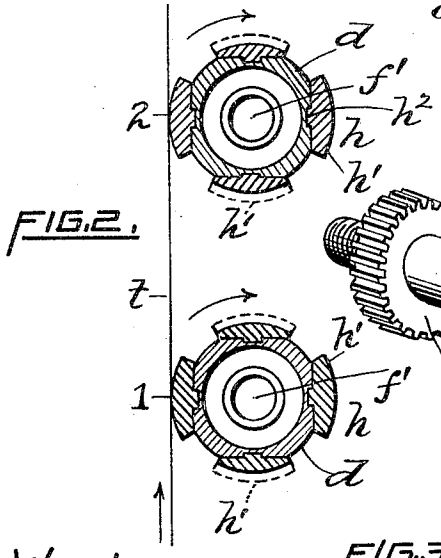


FIG. 2.

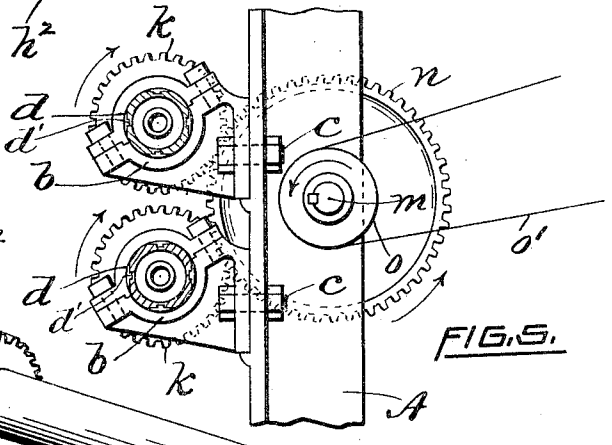


FIG. 5.

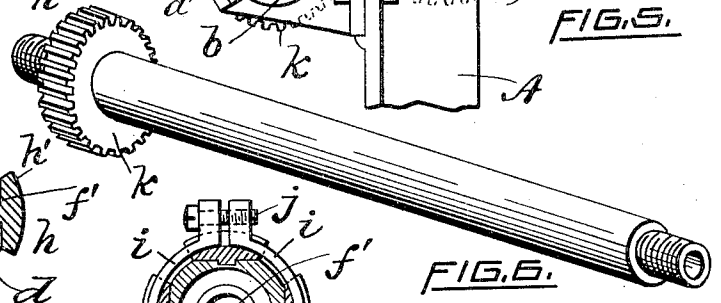


FIG. 6.

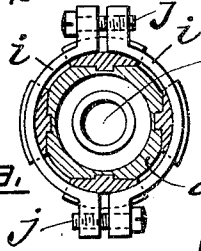


FIG. 3.

WITNESSES

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THREAD-DRESSING MACHINE.

No. 798,276. Specification of Letters Patent. Patented Aug. 29, 1905.

Application filed July 25, 1904. Serial No. 218,139.

To all whom it may concern:

Be it known that I, GEORGE A. FREDENBURGH, a citizen of the United States, residing at the city of Pawtucket, in the county of Providence and State of Rhode Island, have invented a certain new and useful Improvement in Thread-Dressing Machines, of which the following is a specification.

My invention relates to an improvement in the construction of the thread-ironers of a thread-dressing machine; and it consists of the novel construction and combination of parts, as hereinafter described, and specifically set forth in the claims.

In the accompanying sheet of drawings, Figure 1 is a view, partly in central longitudinal section and partly in front elevation, of my improved ironers for a thread-dressing machine and also indicating the movement of the thread as it is operated upon by said ironers. Fig. 2 is an enlarged cross-sectional view of the ironers, taken in line $x\,x$ of Fig. 1. Fig. 3 is a cross-sectional view of the ironers, taken in line $y\,y$ of Fig. 1. Fig. 4 is a side elevation of an ironer as constructed according to my invention. Fig. 5 is a cross-sectional view taken in line $z\,z$ of Fig. 1, illustrating the driving arrangement for rotating the ironers; and Fig. 6 represents a modified form of an ironer.

Like characters indicate like parts.

$a\,a$ denote the end frames of a thread-dressing machine, said frames having cap-box journal-bearing brackets $b\,b$, secured thereon by bolts $c\,c$, as shown in Fig. 5.

Two tubular steam-shafts $d\,d$ have their end portions mounted in the journal-bearings of the brackets $b\,b$, and the axes of said shafts are arranged in a vertical plane one above the other. A steam-inlet pipe e has branches $e'\,e'$, which communicate with the interior of the shafts $d\,d$ at one end thereof, and a steam-outlet pipe f has branches $f'\,f'$, which communicate with the interior of said shafts $d\,d$ at the opposite end thereof. Stuffing-boxes $g\,g$ surround each branch of the pipes e and f, and said stuffing-boxes have interior screw-threaded portions to engage upon screw-threads formed upon each end of the shafts $d\,d$.

My improved thread-ironer h (see Fig. 4) is a narrow strip having a series of contiguous sections whose surfaces are curved, as at points $h'\,h'$, and which surfaces incline in one direction, as shown. These curved surfaces of the ironers are disposed to receive the threads upon them during the operation of finishing. The steam-shafts $d\,d$ are provided with grooves $d'\,d'$, formed in their exterior surfaces and extending between the brackets $b\,b$. These grooves are divided equidistantly apart throughout the circle of the shafts $d\,d$, as seen in Fig. 5.

There is a series of four ironers $h\,h$ mounted on each shaft d, and each of said ironers has a central longitudinal tongue h^2, arranged to fit in a groove of the shafts $d\,d$. The ironers $h\,h$ are secured upon their respective shafts by means of semicircular bands $i\,i$, which have projecting end portions within which are mounted screws $j\,j$, arranged to draw together said bands in holding the ironers upon their shafts, in the manner shown in Fig. 3. Each ironer h of a series is arranged so that its curved surfaces incline in a direction opposite to that of the curved surfaces of the next adjacent ironer. Each series of ironers is mounted in the same position alike on the shafts $d\,d$, and each series of ironers has its curved surfaces arranged in a reverse order to that of the next adjacent series of ironers—that is to say, assuming that one ironer of the lower series would incline in one direction, as at a point 1 in Fig. 2, the ironer of the upper series would incline in the opposite direction, as at a point 2 in said figure.

On one end of each ironer-shaft d is made fast a gear k. A counter-shaft m is mounted in one of the end frames of the machine, and on said shaft is made fast a gear n, which meshes with each of the gears k of the ironer-shafts. A pulley o is keyed upon the counter-shaft m and said pulley is driven by a belt connection o' from the main shaft of the machine.

The ironer-shafts $d\,d$ rotate with the movement of the thread in the direction indicated by the arrows in Figs. 1, 2, and 5.

The pipe e delivers steam into the shafts $d\,d$, and from said shafts the steam passes out through the exhaust f.

The thread (designated by reference-letter t) comes up from a brush-cylinder (not shown) and passes in contact upon each series of ironers $h\,h$, from whence the thread passes to the winding-spools next above on the machine.

The surface speed of the ironers h is much greater than the movement of the thread. The thread in its movement upon the ironers passes in contact upon the highest portion of the sections of one ironer of each series on the shafts $d\,d$ and assumes a diagonal course,

as indicated by the full-line position shown in Fig. 1, and as the shafts *d d* rotate the thread next moves down the inclinations of said sections so that it assumes an opposite diagonal course, as indicated by the broken-line position in said figure. Thence the next succeeding two ironers engage the thread at the highest portion of their sections, after which the thread moves down the inclinations of said sections in the same manner as above described, and so on successively throughout the circle of the ironers. Thus the inclinations on each ironer being oppositely disposed cause the thread to be rolled round and smooth, and at the same time each ironer being subjected to great heat from the steam which passes through the shafts *d d* the thread receives a high gloss and superior finish.

Instead of mounting ironers on the uppermost shaft *d* this shaft may be tubular and have a smooth exterior surface (see Fig. 6) for the thread to contact upon during its movement upon the lower series of ironers, this modified ironer-shaft to be mounted and driven in the same manner as the ironer-shafts above described.

This invention is an improvement upon the thread-dressing machine shown and described in Letters Patent of the United States No. 702,786, issued to me June 17, 1902.

What I claim, and desire to secure by Letters Patent, is—

1. In a thread-dressing machine, the combination of two horizontally-arranged tubular shafts situated one over the other and mounted in proper supports on the machine-frame; a series of ironer-strips secured longitudinally of each of said shafts, each of said strips having a series of sections whose surfaces are curved and inclined in one direction and each strip so arranged that its sections incline oppositely to the sections of the next adjacent strip; a pipe adapted to deliver steam at one end of each of the ironer-shafts; an exhaust-pipe from the opposite end of each of the ironer-shafts, and means to rotate each of said shafts in the same direction, substantially as shown and for the purpose specified.

2. In a thread-dressing machine, the combination of two tubular shafts mounted in proper supports on the machine-frame and extending in a vertical plane one above the other; a gear made fast at one end of each of said shafts; a gear in mesh with each gear on said shafts, and receiving power to rotate the same in one direction; a steam-inlet pipe entering one end of each of said shafts; a steam-outlet pipe entering the opposite end of each of said shafts; a series of ironer-strips mounted in the same position alike on each of said shafts, each of said strips having a series of contiguous sections disposing curved surfaces which incline in one direction, and each strip arranged so that its sections incline oppositely to the sections of the next adjacent strip, one series of strips having its sections arranged in the reverse order to those of the next successive series, whereby the thread in contacting upon the sections of said strips is caused to move in alternately opposite oblique directions, substantially as shown and for the purpose specified.

3. In a thread-dressing machine, the combination of a tubular shaft horizontally mounted in proper supports on the machine-frame; a gear made fast on said shaft; a tubular shaft horizontally mounted in proper supports on the machine-frame and situated below first-mentioned shaft; a gear made fast on the second-mentioned shaft; a series of ironer-strips extending longitudinally on the second-mentioned shaft, each of said strips having a series of sections whose surfaces are curved and inclined in one direction, and each of said strips having its sections inclined oppositely to those of the next adjacent strip, whereby the thread is caused to move in alternately opposite oblique directions upon the peripheral surface of the first-mentioned shaft; means to secure said series of ironer-strips upon its tubular shaft; a counter-shaft; a gear made fast on last-mentioned shaft and in mesh with the gears on said tubular shafts; a pulley made fast on said counter-shaft, and a belt connection receiving power to rotate said pulley, substantially as set forth.

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

GEORGE A. FREDENBURGH.

Witnesses:

ARTHUR E. BRICKETT,

DANIEL E. LOCKE.