No. 840,270. PATENTED JAN. 1, 1907.

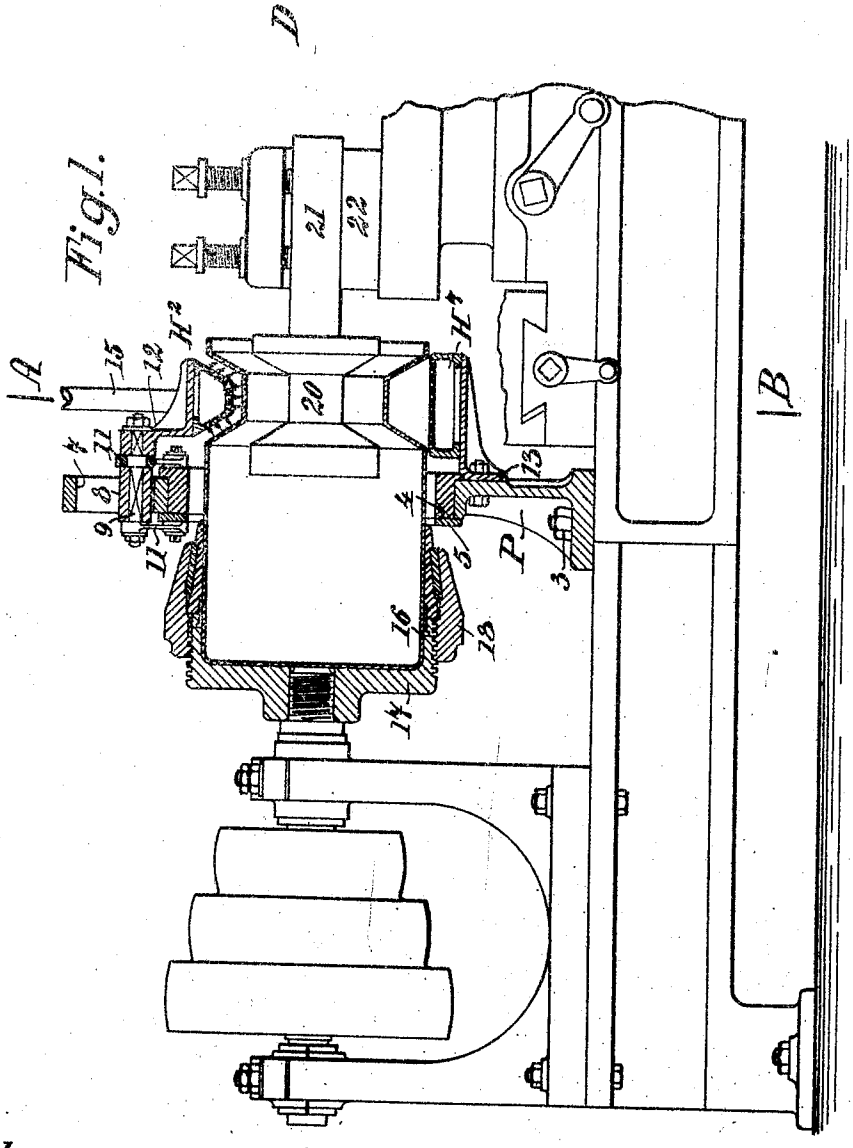
R. THIEL.

HEATING DEVICE FOR SPINNING LATHES.

APPLICATION FILED APR. 27, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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2 SHEETS—SHEET 2.

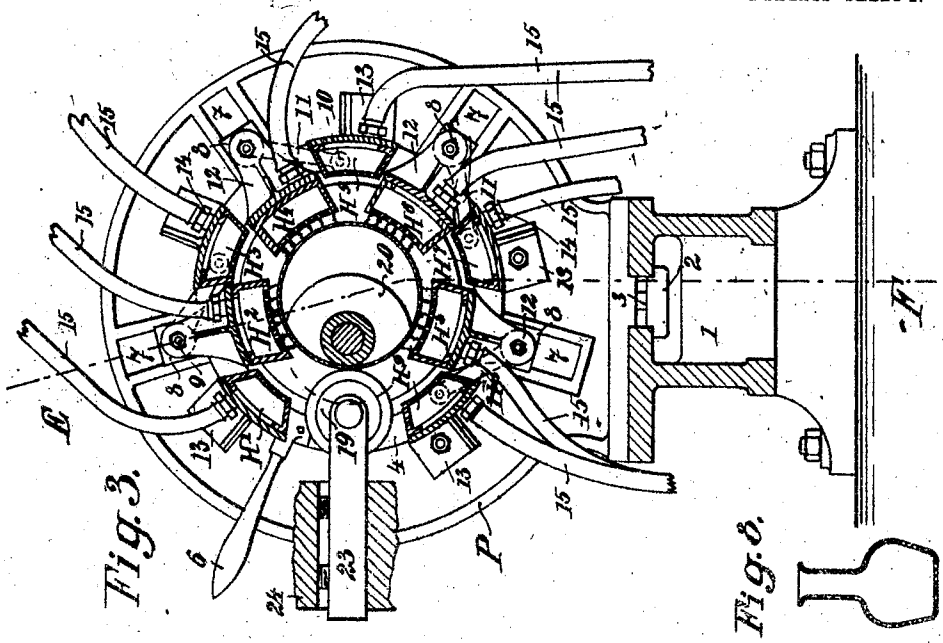


Fig. 3.

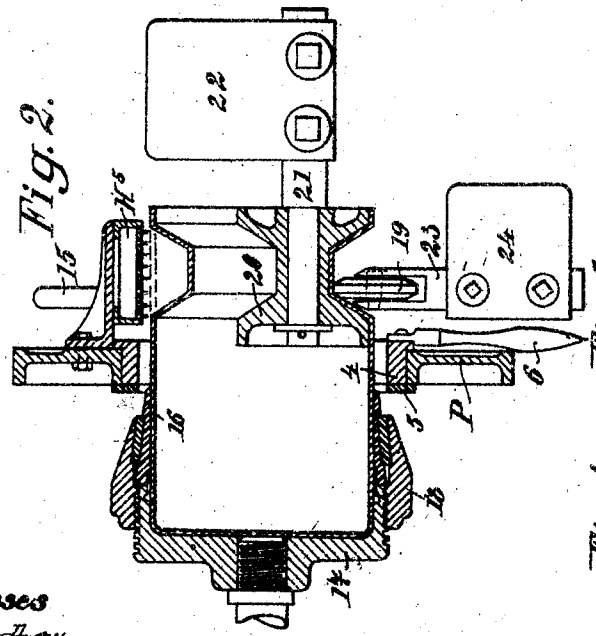


Fig. 2.

Fig. 4.

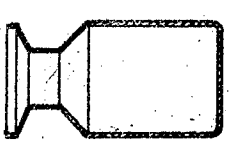


Fig. 5.

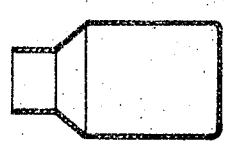


Fig. 6.



Fig. 7.

Fig. 8.

Witnesses

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RUDOLF THIEL, OF LÜBECK, GERMANY.

HEATING DEVICE FOR SPINNING-LATHES.

No. 840,270. Specification of Letters Patent. Patented Jan. 1, 1907.

Application filed April 27, 1905. Serial No. 257,604.

To all whom it may concern:

Be it known that I, RUDOLF THIEL, a citizen of the Empire of Germany, residing at Lübeck, in the Empire of Germany, have invented a new and useful Heating Device for Spinning-Lathes, of which the following is a specification.

My invention relates to improvements in heating devices for spinning-lathes whereby it is rendered possible to maintain the heating device at a proper and uniform distance from the blank while the latter is being spun—that is to say, during the reduction or increase of the diameter of the respective part of the blank—so that the metal is at all times heated up to the right temperature and cannot become brittle and cracked.

The objects of my improvement are, first, to provide an annular plate on the bed of the lathe, which plate surrounds the blank; second, to provide a plurality of hollow and perforated heaters, of which certain are secured on the annular plate, while the other heaters alternating therewith are radially guided in the plate, and, third, to provide a device for simultaneously feeding the movable heaters on the annular plate so as to maintain the proper distance between them and the blank. I attain these objects by the heating device illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a part of a spinning-lathe and a vertical longitudinal section through the heating device and the blank on the broken line E F in Fig. 3. Fig. 2 is a horizontal section through the heating device and the blank on the line C D in Fig. 1. Fig. 3 is a vertical cross-section through the line A B in Fig. 1, and Figs. 4 to 8 represent vertical sections of various spun work-pieces.

Similar characters of reference refer to similar parts throughout the several views.

The heating device comprises an annular plate P and several heaters H′ to H^9. The plate P is longitudinally adjustable on the bed 1 of the spinning-lathe by means of a plate 2 and a bolt 3. This plate P is bored and arranged to receive an annular slide 4, which is prevented from longitudinally shifting by its flange, and a ring 5, secured on it by means of screws. (Not shown). The slide 4 is provided with a handle 6, by means of which it can be turned through a certain angle. The plate P is provided with several (here four) radial slots 7 7, in which slides 8 8 are mounted to move. In these four slides 8 8 are secured four bolts 9 9, which are pivotally connected with four pins 10 10 in the annular slide 4 by means of four pairs of links 11 11, so that by moving the handle 6 up and down the four slides 8 8 can be moved inwardly toward the axis and outwardly, respectively. On the right ends of the bolts 9 9 are fastened suitable projections 12 12 of the movable heaters H^2, H^4, H^6, and H^8. The stationary heaters H′, H^3, H^5, H^7, and H^9 are fastened with their feet 13 13 on the plate P. All heaters H′ to H^9 are provided with suitable connections 14 14, to which hose 15 15 can be attached for the supply of gas from some source. It will be seen that the movable heaters alternate with the stationary heaters and partake in the motion of the slides 8 8. On the front side a suitable space is left between the two stationary heaters H′ and H^9 for the introduction of a spinning-tool 19 or any pattern-roll, such as 20.

Figs. 4 to 8 show a few examples of spun work-pieces, which may be produced on the spinning-lathe with the aid of the heating device, the blanks having been first drawn in any known manner.

The heating device is operated as follows: Assuming the work-piece 16 to be produced to have the shape shown at Fig. 4, then a cylindrical blank, which is closed at the one end, is secured on the face-plate 17 by means of a centering device 18 of any known construction. The plate P is placed on the bed 1, and the handle 6 is pushed downward, so as to place the links 11 11 radially, when the movable heaters H^2, H^4, H^6, and H^8 will occupy their extreme external positions, and their perforated internal faces will be in the same circle as those of the stationary heaters. The plate P is shifted to the left and secured in such a position that the heaters H′ to H^9 surround the blank on the respective place where it is to be spun. A suitable pattern-roll 20 is put on a bracket 21, and the latter is secured in a convenient support 22 on the respective compound-slide rest. This pattern-roll 20 is then introduced into the blank and set against its inside on the front, as is shown at Fig. 2. A suitable spinning-tool 19 is put on a convenient bracket or holder 23, and the latter is secured in a support 24. Gas, either alone or mixed with compressed air, is turned on by means of the respective valves or cocks and

conducted through several or all hose 15 15 to the respective heaters H′ to H⁹. The gas or the mixture of gas and air escaping from the perforations of the heaters is then lighted, so that the flames commence to heat the metal of the blank. The lathe is started, and the spinning-tool is applied to the blank, as usual, in the gap between the two front stationary heaters H′ and H⁹. The metal of the blank is uniformly heated, care being taken to so feed the movable heaters H², H⁴, H⁶, and H⁸ by means of the handle 6 as to maintain the correct distance between their internal faces and the respective parts of the blank. It may be convenient to first admit the gas or the mixture only to the stationary heaters H′, H³, H⁵, H⁷, and H⁹ and afterward when the distance between them and the blank increases also to the movable heaters H², H⁴, H⁶, and H⁸. If the distance between the stationary heaters and the blank becomes too great for the gas-flames to properly heat the metal, the supply of gas or mixture to the stationary heaters may be stopped and only that to the movable heaters be maintained. The metal of the work-piece is thus kept at the proper temperature, so that it cannot become brittle and cracked.

As is evident from Fig. 1, the movable heaters require to have a cross-section in correspondence with the section of the pattern-roll 20. All the heaters are detachable and may be replaced by other ones in accordance with the required shape of the work-piece. When it is desired to hollow out the blank to a shape shown in Fig. 7, of course the pattern-roll of a corresponding shape will have to be applied to the blank from without in the gap between the two stationary heaters H′ and H⁹, while the spinning-tool 19 on a suitable bracket will have to be applied from within. The annular plate P should have an opening of such a size that it can be at once removed after the completion of the work-piece.

The heating device may be varied in many respects without departing from the spirit of my invention.

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

1. A heating device for spinning-lathes, comprising a plurality of members through which heat may be supplied to the work, and means for advancing said members inwardly as the dimensions of said work is reduced.

2. A heating device for spinning-lathes comprising a vertical annular plate movable on the lathe-bed, a plurality of stationary segmental heating-boxes and a plurality of radially-movable segmental heating-boxes on said vertical annular plate, the movable boxes alternating with the stationary boxes and two of the latter leaving between them a gap for the spinning-tool or pattern-roll.

3. In a heating device for spinning-lathes, the combination with a vertical annular plate adapted to slide on the lathe-bed and provided with a plurality of radial slots, of a plurality of stationary heating-boxes on said vertical annular plate and alternating with said plurality of radial slots, two of these boxes leaving between them a gap for the spinning-tool or pattern-roll, and a plurality of movable heating-boxes guided in said plurality of radial slots.

4. In a heating device for spinning-lathes, the combination with a vertical annular plate adapted to slide on the lathe-bed and provided with a plurality of radial slots, of a plurality of stationary heating-boxes on said vertical annular plate and alternating with said plurality of radial slots, two of these boxes leaving between them a gap for the spinning-tool or pattern-roll, a plurality of movable heating-boxes guided in said plurality of radial slots, means for supplying heating medium to said plurality of stationary heating-boxes and said plurality of movable heating-boxes, and means for simultaneously moving said plurality of movable heating-boxes.

5. In a heating device for spinning-lathes, the combination with a vertical annular plate adapted to slide on the lathe-bed and provided with a plurality of radial slots, of a plurality of stationary segmental boxes on said vertical annular plate and alternating with said plurality of radial slots, two of these boxes leaving between them a gap for the spinning-tool or pattern-roll, a plurality of movable segmental boxes guided in said plurality of radial slots and arranged to nearly touch in their initial position said plurality of stationary segmental boxes, all of said plurality of stationary segmental boxes and of said plurality of movable segmental boxes being each provided on the inside with a plurality of holes for the escape of gas and on the outside with a connection, means for supplying gas to the connections of said plurality of stationary segmental boxes and said plurality of movable segmental boxes, and means for simultaneously moving said plurality of movable segmental boxes.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RUDOLF THIEL.

Witnesses:
H. EHLERS,
JOHS. WULF.