(No Model.)

R. NEUSS.

MANUFACTURE OF PINS.

No. 601,062. Patented Mar. 22, 1898.

Fig. I.

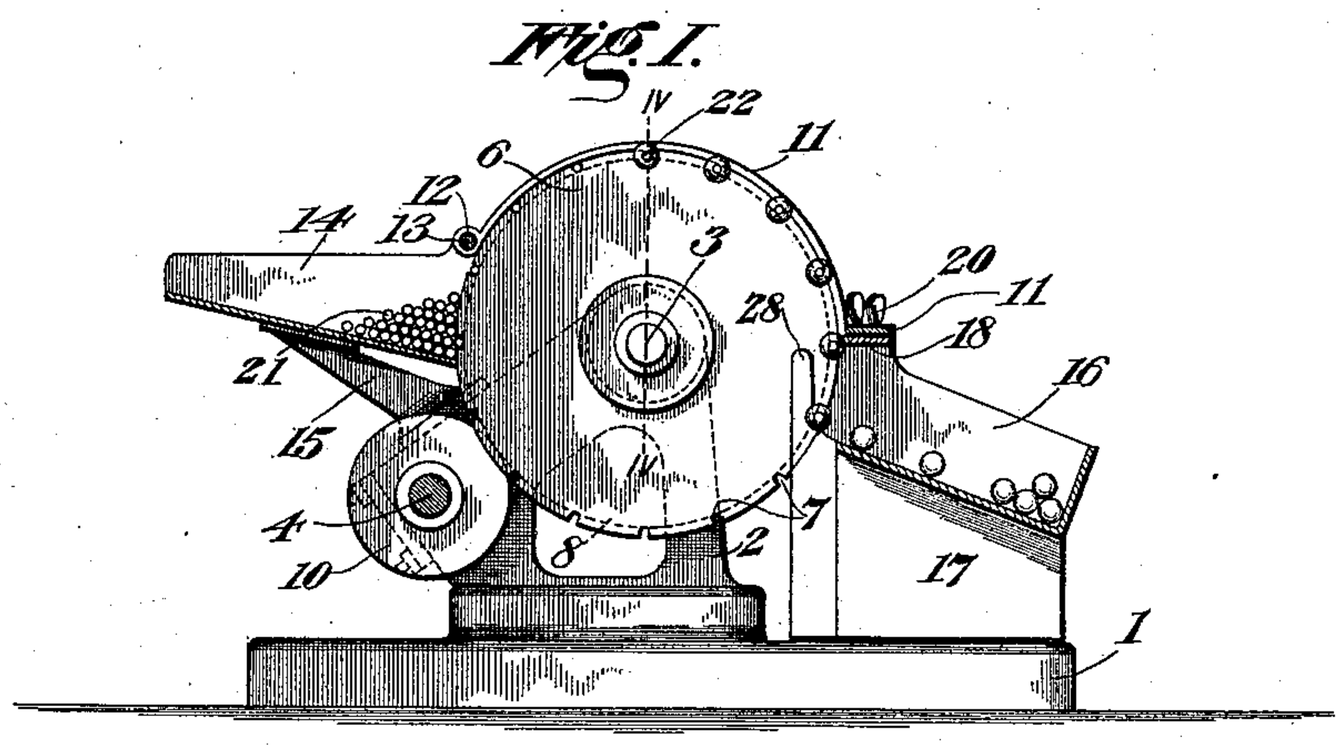


Fig. II.

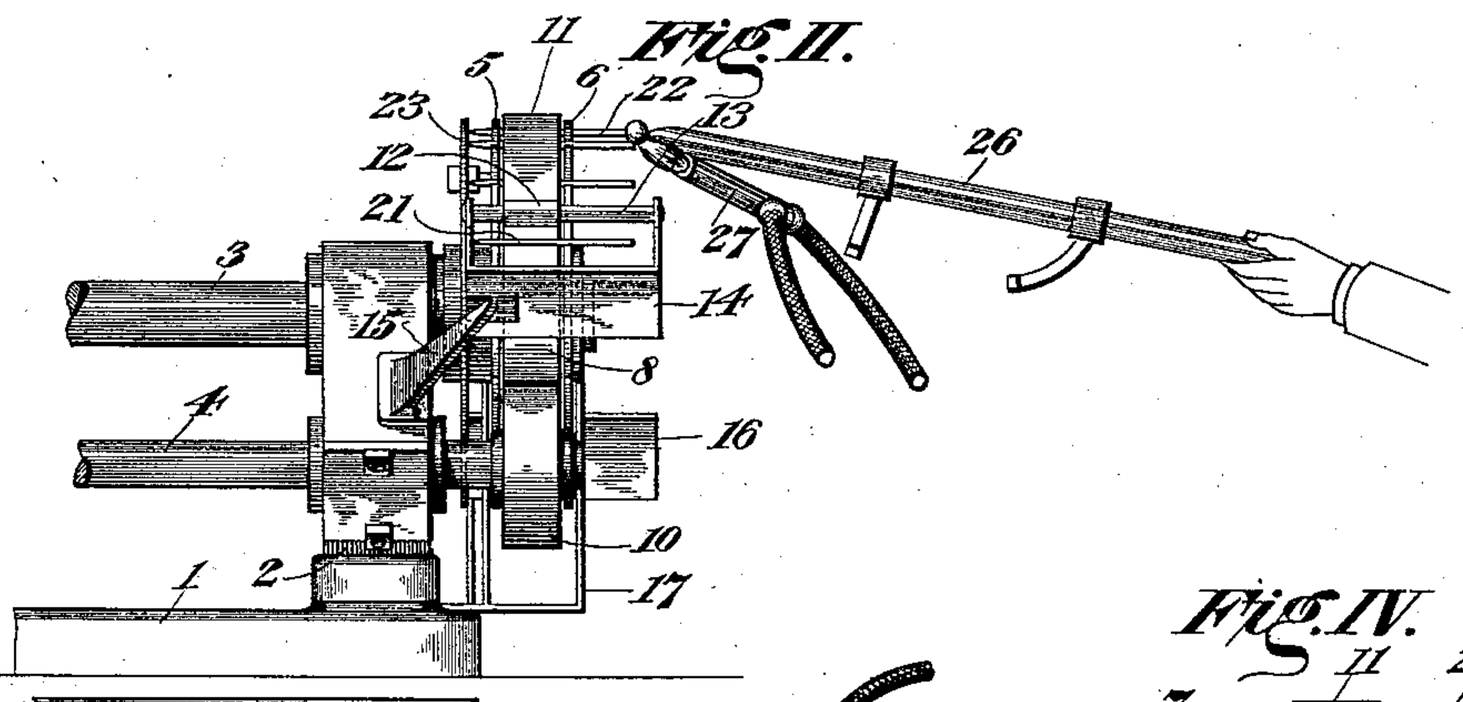


Fig. IV.

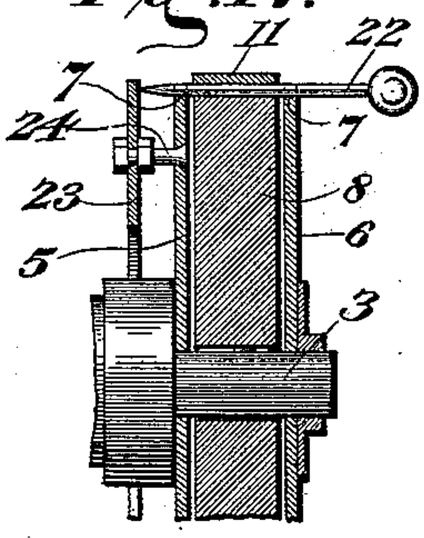
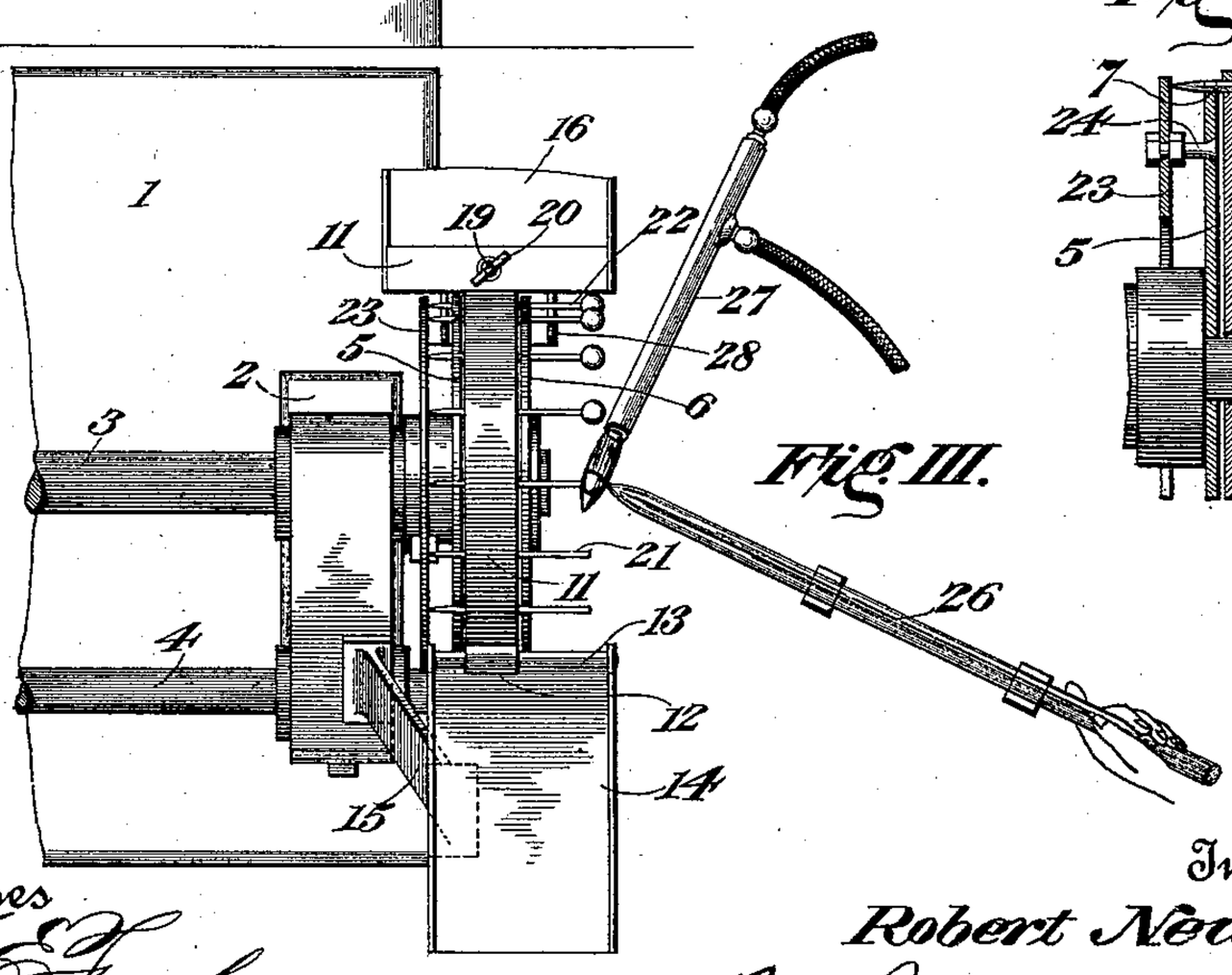


Fig. III.



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UNITED STATES PATENT OFFICE.

ROBERT NEUSS, OF AIX-LA-CHAPELLE, GERMANY.

MANUFACTURE OF PINS.

SPECIFICATION forming part of Letters Patent No. 601,062, dated March 22, 1898.

Application filed April 21, 1897. Serial No. 633,179. (No model.) Patented in France February 10, 1897, No. 263,908; in England February 12, 1897, No. 3,804; in Belgium February 17, 1897, No. 126,409; in Spain April 1, 1897, No. 20,437, and in Austria May 21, 1897, No. 1,316/47.

To all whom it may concern:

Be it known that I, ROBERT NEUSS, of Aix-la-Chapelle, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in the Manufacture of Pins, (for which I have obtained patents in France, No. 263,908, bearing date of February 10, 1897; in Great Britain, No. 3,804, bearing date February 12, 1897; in Belgium, No. 126,409, bearing date February 17, 1897; in Austria, No. 1,316, Vol. XLVII, bearing date May 21, 1897, and in Spain, No. 20,437, bearing date April 1, 1897,) of which the following is a complete specification, reference being had to the accompanying drawings.

This invention relates to the process of and apparatus for forming glass heads upon pins.

The manufacture of glass-headed pins has heretofore been accomplished either by exclusively manual or exclusively mechanical means. The method of manufacture by hand is slow and expensive and the method of manufacture mechanically is without satisfactory results, chiefly because of the inequalities of temperatures at which glass may be worked to advantage.

The object of my invention is to combine the mechanical and manual methods of manufacture in such a manner as to increase the facility and rapidity of manufacture incident to the mechanical means employed, in connection with the accommodation to those conditions that require manipulation and the constant attention of an operator.

The machine whose operation enters into my method of manufacture effects the presentation of the pins, their rotation at a constant speed, and the consequent accurate rounding of the heads when formed, as well as the disposal of the completed article, while the setting of the head, the supporting and application of the melting-flame, as well as the presentation of the glass rod, are effected by hand.

In the accompanying drawings, Figure I is a front elevation of my machine, partially in section. Fig. II is a side elevation of a portion of the same, illustrating the method of manually forming the glass head. Fig. III is a top plan view of the subject-matter of Fig. II. Fig. IV is a fragmentary detail sectional view, partially in elevation, on the line IV IV of Fig. I.

Referring to the figures on the drawings, 1 indicates a base, and 2 an upright thereon, constituting the frame of my machine. The frame may be of any suitable shape, size, and dimensions, the form illustrated being shown by way of example. Within suitable boxes in the upright 2 are separately mounted in any suitable manner driving-shafts 3 and 4. They extend, respectively, upon opposite sides of the uprights, communicating at one end, respectively, with suitable rotating mechanism (not illustrated) and projecting at the other end to accommodate the several members which they are designed to actuate. The shaft 3 is provided upon the last-named projecting end with a plurality of fixed disks 5 and 6, each of which is provided in its periphery with a series of notches 7, each pair of notches being located in the same horizontal plane.

Between the disks 5 and 6 is loosely mounted a friction-wheel 8, (see Fig. IV,) whose external diameter is approximately equal to or slightly greater than the distance between the bottoms of diametrically opposite notches 7 in the disks 5 and 6, whereby a rod laid into corresponding notches may be brought into frictional contact with the periphery of the wheel 8 and may derive through such frictional contact rotatory movement within the notches from the rotatory movement of the wheel 8.

The shaft 4 is provided upon its projecting end adjacent to the disks 5 and 6 with a fixed wheel or pulley 10, that lies between the disks and whose periphery makes frictional contact with the periphery of the wheel 8. The disks 5 and 6 and the wheel 8 may therefore be independently rotated through the rotation of the shafts 3 and 4. The notches 7 in the disks are designed to accommodate pin-shafts, which, when laid in the notches and pressed against the periphery of the wheel 8, are adapted to be rotated in the manner above suggested.

In order to press the pin-shafts into frictional contact with the wheel 8, I prefer to employ a strap 11, extending over a portion of the periphery of the wheel 8. The strap

is preferably pivotally secured, as indicated at 12, to a rod 13, extending between the side pieces of a feed-chute 14, that is supported, as by a bracket-arm 15 upon the upright 2, against the face of the wheel 8 and the edges of the disks 5 and 6.

16 indicates a discharge-chute carried, as upon a support 17, upon the side of the wall 8, opposite the chute 14. It may be provided with a cross-piece 18, to which, as by means of a bolt 19 and wing-nut 20, the end of the strap 11 is adjustably secured.

21 indicates a stack of pin blanks or shafts in the chute 14, and 22 the headed pins.

The numeral 21 is taken to indicate the pin-blanks, wherever they appear, and the numeral 22 the pin-shafts after the heads are fixed upon the blanks.

23 indicates a gage-plate secured, as by studs 24, to the faces of the disk 5. It revolves with the disks 5 and 6 and is designed to limit the endwise movement of pin-shafts in the notches 7, as clearly indicated in the drawings.

26 indicates a glass rod from which the heads are to be formed, and 27 a blowpipe.

In carrying out my process the pin-blanks 21 in the chute 14 are taken up by the notches 7 of the rotating disks 5 and 6, and when carried under the strap 11 are brought into contact with the periphery of the wall 8. That wheel being rotated in the opposite direction to or at a greater speed than that of the shaft 3, the pin-shafts within the notches 7 derive a rotary movement proportionate to the speed of rotation of the shafts 3 and 4, which may be increased or diminished, as required. As soon as the pin-shaft begins to rotate the workman may apply the rod 26 to the blunt end of the blank and melt a portion of the glass by the application of the blowpipe 27. (See Figs. II and III.) A quantity of the glass will be melted from the rod 26 proportionate to the degree of heat and the length of time of application of the flame. The melted glass is taken up by the rotating pin-blank and receives, through the constant rotation of the blank, an accurate spherical form. As soon as the head of required size is formed the operator proceeds to the next rotating blank in the series and forms a head thereon in the manner described. In the meantime, without intermission, the previously-formed head continues to rotate, preserving its spherical form until it begins to cool and set. A variable speed of rotation, as in hand, twirling of the pin-blank or a changing in the direction of rotation, tends to destroy the shape of the head and to prevent the formation uniformly of that true spherical form of the head produced by the practice of my method. After the formation of a head upon a blank the continuous rotation of the disks 5 and 6 carries the pin toward the chute 16, into which the finished pin is dropped, on account of the weight of the finished article, or assisted, if need be, by strippers 28, located upon opposite sides of the disks 5 and 6 in the path of the pin-shafts.

The operation of the shafts 3 and 4 may be constant or intermittent, but the movement of the pin-blanks derivable from the movement of the shafts should be constant and continuous in one direction during the operation of forming and setting or cooling of each pin-head.

The advantages of the process above described over those referred to as previously existing are--

First. The setting of the head is rendered a continuous process.

Second. The pin-shafts are rotated continuously in the same direction both during the formation of the glass head and while the glass of the head continues soft, whereby a true spherical form of head is obtained.

Third. The movement of the glass rod from pin-blank to pin-blank is easily effected without interruption of the operation of forming the heads.

Fourth. The process is a time-saving one.

Fifth. The glass rod is completely independent of the motion of the machine that rotates the pin-shafts and can be applied by the hand of the workman in any direction and in any preferred manner to the revolving pin-blank. If, for instance, a small head is to be formed, the pin-blank is rotated at a high rate of speed and the glass rod is brought into the flame, so that a small amount of the glass is melted, the rod touching the shaft very lightly. For large heads the glass is more extensively heated and is brought into closer contact with the pin-blank.

Glass rods as heretofore manufactured are quite unlike in thickness, and the same glass rod often melts in part with difficulty and in part easily. Consequently it is practically impossible to apply such unequal material by mechanical means to form heads upon the pin-shafts in a uniform manner. A workman, however, by the means of my invention may supply the glass as required and produce practically perfect and uniform results.

What I claim is—

1. The herein-described improvement in the art of fixing glass heads to pin-blanks, which consists in advancing the pin-blanks, rotating them at a constant rate of speed each on its own axis, melting a glass rod, and bringing the ends of the pin-blanks which are to be headed and the melted end of the glass rod together, while the pin-blanks are being rotated, substantially as set forth.

2. The herein-described improvement in the art of fixing glass heads to pin-blanks, which consists in advancing the pin-blanks, rotating them in one direction at a constant rate of speed each on its own axis, melting a glass rod, and bringing successively the ends of the pin-blanks which are to be headed and the melted end of the glass rod together while the pin-blanks are being rotated, and continuing the rotation of each pin-blank until

its head is set, or cooled, substantially as set forth.

3. The combination of a disk provided with means for loosely supporting and carrying pin-shafts, a wheel arranged to bear upon the pin-shafts while held in the aforesaid carrying-disk, and means for producing relative rotary movement of the disk and wheel, whereby the pin-shafts are rotated, substantially as set forth.

4. The combination of a pair of pin-carrying disks arranged side by side, adapted to move simultaneously, and provided with alined supporting-bearings for the pin-shafts in their edges, a wheel loosely mounted between the said carrying-disks upon the disk-shaft, means for pressing the pins upon the carrying-disks against the periphery of the wheel, and means for imparting relative rotary movement to the disks and wheel, whereby the pin-shafts are rotated through frictional contact with the wheel, substantially as set forth.

5. The combination with means for supporting and advancing pin-blanks, of means for imparting to the pin-blanks a constant rotary motion in one direction, and means for applying melted glass to the pin-shafts while they are being rotated, substantially as set forth.

6. The combination with two rotary disks fixed to a shaft, and provided with notches in their edges in which pin-shafts are adapted to lie, of a wheel arranged between the pin-carrying disks, and mounted so as to be rotated independently of the pair of disks and adapted to bear upon the pin-shafts where they are held by the carrying-disks, and by its revolutions to rotate them, means for holding the pin-shafts in the notches of the pin-carrying disks, and means for imparting relative rotary movement to the disks and to the wheel, respectively, substantially as set forth.

7. The combination with a pair of notched disks fixed to a shaft, and an intermediate wheel loosely mounted thereon, of a strap contiguous and parallel to a portion of the periphery of the wheel, and means for imparting independent relative movement to the disks and wheel, substantially as set forth.

8. The combination with a frame, shaft and pair of notched disks fixed to the shaft, of a wheel loosely mounted upon the shaft between the disks, a strap contiguous and parallel to the periphery of the wheel, strippers upon the sides of the disks, and means for imparting independent rotary movement to the wheel and disks, respectively, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

ROBERT NEUSS.

Witnesses:
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