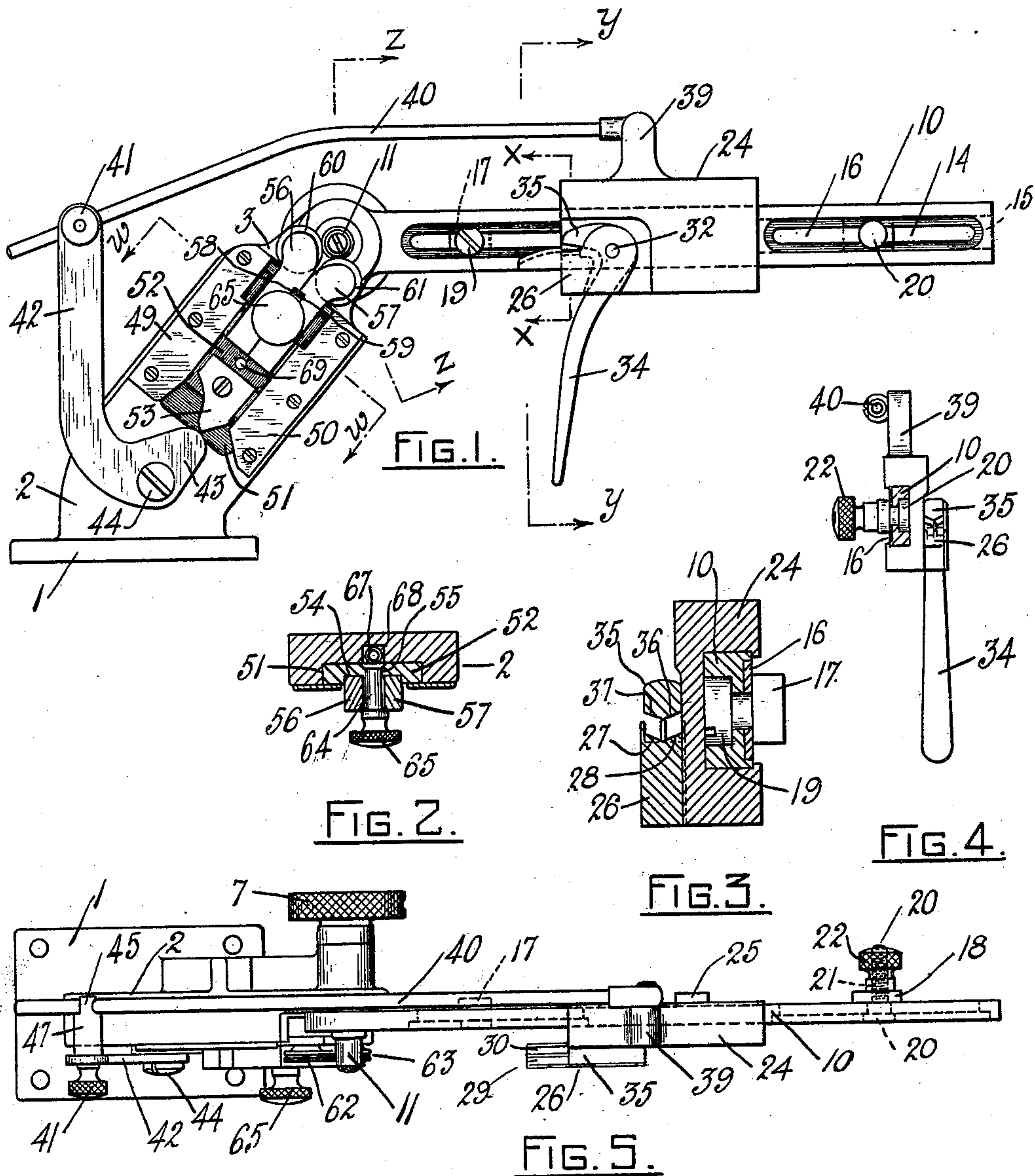


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APPLICATION FILED DEC. 20, 1907.

903,224.

Patented Nov. 10, 1908.

2 SHEETS—SHEET 1.



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INVENTOR.

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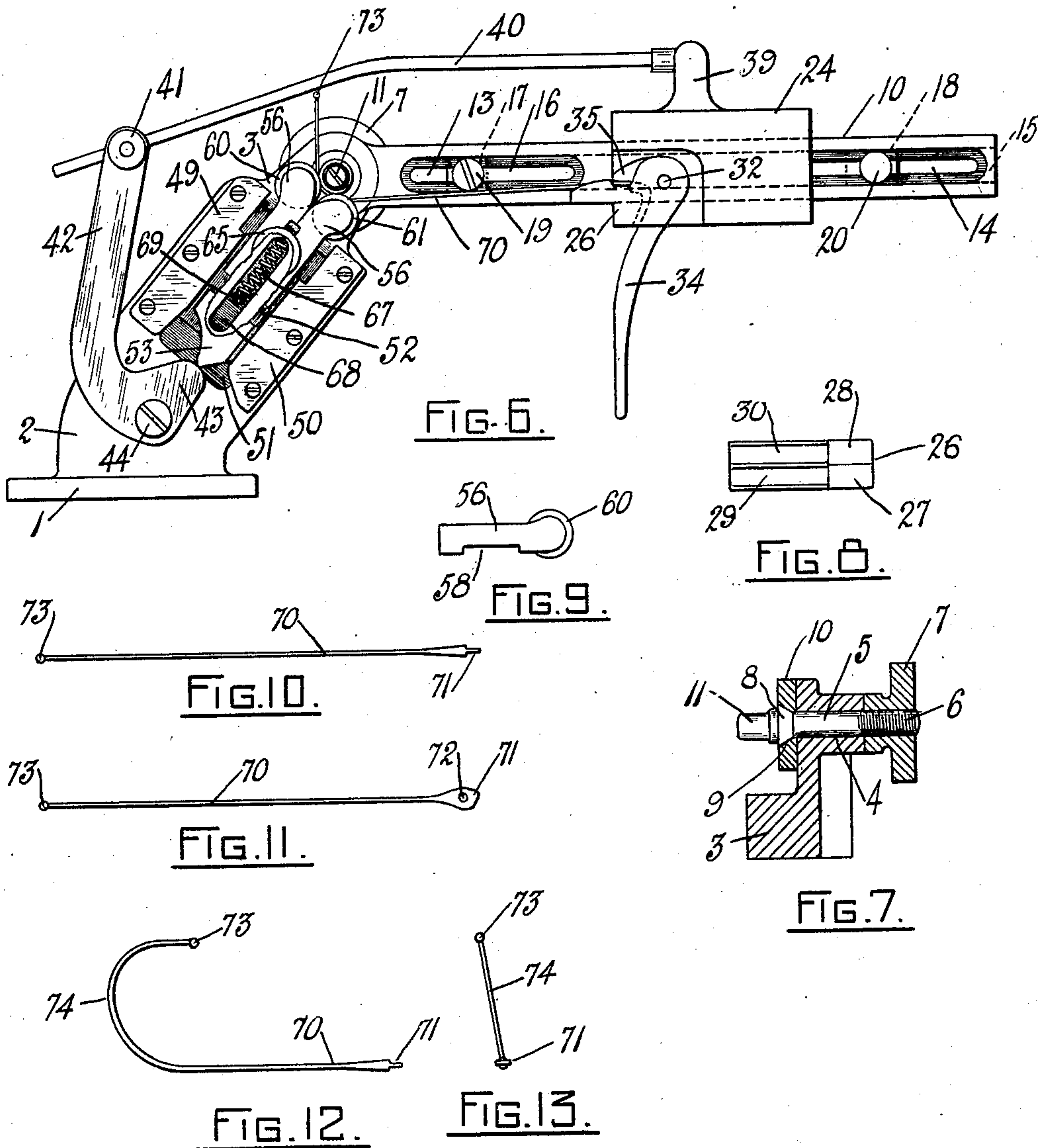
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Svan Norden  
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ATTORNEY.



# UNITED STATES PATENT OFFICE.

SVAN NORDEN, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO FREDERICK A. STEVENS,  
OF PROVIDENCE, RHODE ISLAND.

## MACHINE FOR BENDING TEMPLES.

No. 903,224.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed December 20, 1907. Serial No. 407,271.

*To all whom it may concern:*

Be it known that I, SVAN NORDEN, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Bending Temples, of which the following is a specification.

My invention relates to a machine for bending spectacle temples. Its essential purpose is to provide a mechanical means for performing the bending operation, which operation has heretofore been done manually by the thumb and forefinger of the operator, with the result that the bends were non-uniform, the operation slow, the shape unset, and the tension of the bend weak.

My invention consists in a mechanical device for bending the temples; means for operating upon blanks of various lengths; means for locating the bends at various points along the blanks; means for increasing or decreasing the dimensions of the bend; and means for imparting a transverse inclination to the bent portion.

Other novel features will be hereinafter pointed out and claimed.

In the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of my new machine. Figs 2, 3 and 4, sections on lines *w w*, *x x*, and *y y*, respectively of Fig. 1. Fig. 5, a plan of the machine. Fig. 6, a side elevation of the machine with parts broken away. Fig. 7, a section on line *z z* of Fig. 1. Fig. 8, a plan of the clamping rest. Fig. 9, a detail view of one of the blocks and roll. Fig. 10, a side view of a temple blank. Fig. 11, a plan view of the same. Fig. 12, a side view of a bent temple, and Fig. 13, an end elevation of the same.

Like reference characters indicate like parts throughout the views.

A convenient and approved embodiment of my invention consists of a horizontal base, 1, integral with an upwardly and forwardly inclined body or frame, 2, terminating in a reduced elongated portion, 3, provided with an opening, 4, to receive, as shown in Fig. 7, a pivot member, 5, provided at one end with threads, 6, to receive a milled binding nut, 7; and intermediate its length with a beveled shoulder, 8, seated in a similarly shaped opening, 9, in a horizontally disposed pivoted supporting rod, 10; and with a projecting

end portion, 11, to form a cylindrical anvil, former, or mandrel, preferably non rotary. By the nut, 7, the rod, 10, pivoted as described at its end, may be radially adjusted micrometrically or otherwise to any desired angular relation with the anvil. By this adjustment the magnitude of the temple curve may be increased or diminished. The rod, 10, is provided near its ends with oblong slots, 13, 14, and upon its face with a guide-way, 15, in which is slidably mounted a plate, 16, having fixed upon the ends of its outer face square stops, 17, 18; and upon the corresponding parts of its inner face guide pins, 19, 20. Pin 20 has threads, 21, to receive a binding nut, 22, whereby the plate, 16, with its stops, 17 and 18, may be longitudinally adjusted to limit the travel of the slide now to be described, whereby temple blanks of various lengths may be accommodated.

Slidably mounted on the rod, 10, is a drawing block or slide, 24, provided with a downward projection or lug, 25, upon its rear adapted to contact with and be checked by the stops, 17 and 18, when the slide is being reciprocated. A clamping rest or support, 26, for the temple heads is fixed to the lower front portion of the slide, provided upon its upper face with two longitudinally disposed downwardly converging beveled bearing surfaces, 27, 28, each of which surfaces is inclined with relation to the axis of the mandrel. Forward of and in alinement with the surfaces, 27 and 28, as shown in Fig. 8, are respectively the channels, 29 and 30, which facilitate the introduction of a temple to either one of the surfaces, 27, 28. A pivot pin, 32, fixed in the slide, 24, traverses the rest, 26, and upon this is mounted a clamping member, consisting of a vertically disposed depending handle, 34, and a horizontal jaw or head, 35. The bearing face of this jaw comprises two downwardly converging beveled surfaces, 36 and 37, as shown in Fig. 3, to cooperate respectively with the surfaces 26 and 27.

Pivoted to a lug, 39, upon the slide is a rod, 40, which is adjustably connected micrometrically or otherwise by a set screw, 41, with the upper end of a lever arm, 42, provided upon its lower end with a cam or cam plate, 43, pivoted at 44 to the lower end of the frame 1. The adjustable connection herein employed consists, as shown in Fig. 110



5, of a pin, 45, fixed in the arm, 42, and through the end of which loosely passes the rod, 40. A loose spacing sleeve, 47, is upon the pin intermediate the rod and arm. The binding screw, 41, enters the end of the pin, 45. This adjustment locates the bend at any desired point along the blank.

The frame is longitudinally recessed, and marginal guide 49, 50, applied to form a guideway, 51, for a slide, 52, integral with or fixed to which is a projection, 53, adapted to cooperate with the cam, 43. The slide, 52, is also provided with a longitudinally disposed guideway, 54, and a central perforation, 55. Two blocks, 56 and 57, are slidably mounted contiguous with each other in the guideway, 54, of the slide, their adjacent portions having oblong recesses, 58 and 59, respectively. Upon the upper ends of the block are rolls, 60 and 61, respectively, lying in the same vertical plane, provided with peripheral channels, 62 and 63. The vertical plane of the rolls is inclined with relation to the clamping surfaces 27 and 28. These blocks are held in their seats by a pin, 64, seated in the opening, 55, of the slide, and traversing the recesses 58, 59. A binding nut, 65, upon the outer end of this pin frictionally holds the blocks, and permits adjustment of the rolls, 60, and 61, with relation to the anvil, 11, and to each other. The slide, 52, is downwardly pressed by a compression spring, 67, within a cavity, 68, behind the slide. The upper end of the spring bears against the end of the cavity, and the lower spring end rests against a pin, 69, in the slide. This spring insures cooperation of the cam, 43, and projection, 53. The adjustment of the rolls towards and away from the anvil varies the degree of curvature of the temple bend.

The blanks from which the temples are bent comprise a long cylindrical body, 70, of springy material, having one end flattened to form a base, 71, which is provided with a central perforation, 72. The outer end of the shaft or body terminates in a ball, 73. After the bending operation, the outer end of the blank has nearly a semi-circular curve as at 74, and the curved portion is laterally inclined with relation to the plane of the head as shown in Fig. 13. The inclination of one of a pair of temples is towards the right, and of the other towards the left. This inclination is imparted by the beveled clamping surfaces, 27 or 28 in conjunction with the bending devices, whereby a torsional effect is produced.

The general operation of my machine is as follows: The various described adjustments are made for the particular sized blanks or shaped temples. The slide, 24, is manually pushed to a point adjacent the mandrel, 11, which operation, through the rod, 40, and arm, 42, moves the cam, 43, into a position

which permits the rolls, 60, 61, under tension of spring, 67, to recede from the mandrel. The clamping jaw, 35, is then elevated, and one end of a blank, 70, placed in one of the channels, 29, 30, with the head, 71, resting upon one of the surfaces, 27, 28. The handle, 34, of the clamping member is then pulled towards the operator, which simultaneously clamps the temple head, 71, and moves the slide, 24, along the arm away from the mandrel until the slide is checked by the stop, 18. This movement of the slide is communicated through the cam, 43, to the slide, 52, which forces the rolls, 60, 61, towards the mandrel, 11, with the blank resting in their peripheral channels, 62, 63, whereby the blank is continuously forced or pressed against the mandrel, during the latter part of the travel of the slide, 24, giving the ellipsoidal curve to the blank. It should be noted that the cam, 43, is so timed that the bending rolls begin to recede from the mandrel shortly before the end, 73, of the blank reaches them. In Fig. 6, the bending rolls are shown operating upon a blank, 70.

What I claim is,

1. In a machine for bending temples, the combination with a member across which the blank is adapted to be drawn, of means engaging one end of the blank for drawing the blank across the mandrel, means for pressing the blank against the mandrel, and means for forcing the free end of the blank out of the plane of travel of the blank during the drawing movement.

2. In a machine for bending temples, the combination with a member across which the blank is adapted to be drawn, of means for drawing the blank, and means for pressing the blank in the form of an arc against said member during the drawing movement.

3. In a machine for bending temples, the combination with a mandrel for the blank, of slidable means for drawing the blank across the mandrel, and means operated by the sliding means for forcing the blank against the mandrel.

4. In a machine for bending temples, the combination with a cylindrical mandrel for the blank, of means for drawing the blank over the mandrel, and means actuated by the drawing means for forcing the blank against the mandrel.

5. In a machine for bending temples, the combination with a cylindrical mandrel for the blank, of means for drawing the blank across the mandrel, and means operated by the drawing means for forcing the blank against the mandrel.

6. In a machine for bending temples, the combination with a mandrel for the blank, and means for maintaining the blank in contact with the mandrel, of means inclined with relation to the axis of the anvil for drawing the blank across the mandrel.



7. In a machine for bending temples, the combination of a mandrel for the blank and means for maintaining the blank in contact with the mandrel, of a single means for both drawing the blank over the mandrel and imparting a lateral inclination to the resulting bend in relation with the base.

8. In a machine for bending temples, the combination with a mandrel for a blank, of means for temporarily pressing the blank against the surface of the mandrel, and means actuating the pressing means for drawing the blank over the mandrel.

9. In a machine for bending temples, the combination with a mandrel for a blank, of means for drawing the blank across the mandrel, and means for pressing the blank against the mandrel during a portion of the drawing movement.

10. In a machine for bending temples, the combination with a mandrel for a blank, of means for drawing the blank across the mandrel, and means operated by the drawing means for pressing the blank against the mandrel during a portion only of the drawing movement.

11. In a machine for bending temples, the combination with a mandrel for the blank, of means for drawing the blank over the mandrel, and means for pressing the blank against the mandrel at a predetermined point of the blank's travel over the mandrel.

12. In a machine for bending temples, the combination with a mandrel for the blank, of means for drawing the blank over the mandrel, and means operated by the drawing means for pressing the blank against the mandrel for a predetermined interval during the blank's travel over the mandrel.

13. In a machine for bending temples, the combination with a mandrel for the blank, of means for drawing the blank over the mandrel, and means operated by the drawing means for pressing the blank against the mandrel at a predetermined point of the blank's travel over the mandrel.

14. In a machine for bending temples, the combination with the frame, of a mandrel upon the frame, a rod upon the frame adjacent the mandrel, bending rolls adapted to move towards and away from the mandrel, means for reciprocating the rolls, and a drawing slide mounted upon the rod adapted to actuate the reciprocating means.

15. In a machine for bending temples, the combination with the frame, of a mandrel upon the frame, a rod upon the frame adjacent the mandrel, bending rolls upon the frame adapted to move towards and away from the mandrel, a drawing slide mounted upon the rod and movable towards and away from the mandrel, and operative connections between the slide and rolls.

16. In a machine for bending temples, the combination with the frame, of a mandrel

upon the frame, a rod upon the frame adjacent the mandrel, bending rolls upon the frame adapted to move towards and away from the mandrel, a drawing slide mounted upon the rod and movable towards and away from the mandrel, holding means upon the slide, and operative connections between the slide and rolls.

17. In a machine for bending temples, the combination with the mandrel, of a slide supporting rod adjacent the mandrel, and radially adjustable with relation thereto, a slide movable upon the rod towards and away from the mandrel, and a clamp upon the slide.

18. In a machine for bending temples, the combination with the mandrel, and a slide supporting rod adjacent the mandrel, of a slide upon the rod movable towards and away from the mandrel, a clamp upon the slide, and adjustable stops upon the rod in the path of the slide to limit the longitudinal travel of the slide.

19. In a machine for bending temples, the combination with the mandrel, and a slide supporting rod adjacent the mandrel, of a slide upon the rod, a clamp upon the slide, stops upon the rod in the path of the slide, and means for longitudinally adjusting the stops.

20. In a machine for bending temples, the combination with the frame, of a mandrel upon the frame, a rod pivoted at one end to the frame adjacent the mandrel, means upon the frame for radially adjusting the rod, a slide upon the rod movable towards and away from the mandrel, and a clamp upon the slide.

21. In a machine for bending temples, the combination with the frame, of a pivot member in the frame provided at one end with threads and with its opposite end projecting from the frame to form a mandrel, a binding shoulder upon said member, a rod mounted at one end upon said member intermediate the frame, and shoulder, a binding nut upon the threads, a slide upon the rod, and a clamp upon the slide.

22. In a machine for binding temples, the combination with the frame, of a mandrel upon the frame, bending rolls upon the frame movable towards and away from the mandrel, a rod pivoted at one end to the frame adjacent the mandrel, means upon the frame for radially adjusting the rod, a slide upon the rod movable towards and away from the mandrel, holding means upon the slide, and operative connections between the slide and rolls.

23. In a machine for bending temples, the combination with the frame, of a mandrel for the blank upon the frame, means for pressing the blank against the mandrel, a rod pivoted at one end to the frame adjacent the mandrel, a drawing slide for the blank



upon the rod movable towards and away from the mandrel, and means for radially adjusting the guide with relation to the anvil.

5 24. In a machine for bending temples, the combination with the frame, of a mandrel upon the frame, bending rolls upon the frame movable towards and away from the mandrel, a rod pivoted at one end to the frame  
10 adjacent the mandrel, means for radially adjusting the rod with relation to the mandrel, and drawing means upon the rod, and means actuated by the drawing means for moving the rolls.

15 25. In a machine for bending temples, the combination with the mandrel, slide supporting rod, and slide, of a rest upon the slide, a bearing surface upon the rest, a holding member pivotally mounted upon the  
20 slide, a jaw upon the member above the bearing surface, and a depending handle upon the member.

26. In a machine for bending temples, the combination with the mandrel, slide supporting rod and slide, of a rest upon the slide, a bearing surface upon the rest inclined with relation to the axis of the mandrel, and means upon the slide for holding the head of a temple blank in frictional contact with the  
30 bearing surface.

27. In a machine for bending temples, the combination with the mandrel, slide supporting rod, and slide, of a rest upon the slide, a bearing surface upon the rest inclined  
35 with relation to the axis of the mandrel, a holding member pivotally mounted upon the slide, a jaw upon the member above the bearing surface provided with an inclined lower face, and a depending handle upon the  
40 member.

28. In a machine for bending temples, the combination with the mandrel, slide supporting rod, and slide, of a rest upon the slide converging beveled bearing surfaces  
45 upon the rest each inclined with relation to the axis of the mandrel, channels in the rest in alinement with the bearing surfaces, a member pivotally mounted upon the slide, a jaw upon the member above the bearing surfaces provided with bevels upon its lower  
50 face, and a depending handle upon the member.

29. In a machine for bending temples, the combination with the frame and mandrel, of  
55 a drawing slide mounted in the frame movable towards and away from the mandrel, blocks mounted upon the slide, bending rolls upon the blocks, a cam upon the frame cooperating with slide, and means for operating the cam.  
60

30. In a machine for bending temples, the combination with the frame and mandrel, of a drawing slide mounted in the frame movable towards and away from the man-

drel, blocks mounted upon the slide, bending rolls upon the blocks adapted to approach the mandrel when the slide is advanced, means upon the slide for adjusting the blocks with relation to the mandrel, and means for reciprocating the slide. 65 70

31. In a machine for bending temples, the combination with a member across which the blank is adapted to be drawn, of means for drawing the blank while in contact with said member, and means actuated by the  
75 drawing means for forcing the blank against said member.

32. In a machine for bending temples, the combination with the frame and mandrel, of a slide mounted in the frame movable towards and away from the mandrel, a pair of blocks mounted side by side upon the slide, and provided with oblong cavities upon their opposite inner margins, a binding pin in the slide traversing the cavities, a binding screw upon the pin resting against the blocks, a bending roll upon each block, and means for reciprocating the slide. 80 85

33. In a machine for bending temples, the combination with the frame and anvil, of  
90 a drawing slide mounted in the frame movable towards and away from the mandrel, blocks upon the slide, bending rolls upon the blocks, a cam mounted in the frame and adapted to contact with the slide and means  
95 for moving the cam.

34. In a machine for bending temples, the combination with the frame and mandrel, of a drawing slide mounted in the frame movable towards and away from the mandrel, blocks upon the slide, bending rolls upon the blocks, spring means in the frame for forcing the slide away from the mandrel, a cam pivotally mounted upon the frame and adapted to contact with the slide, a lever  
105 arm upon the cam, and means for vibrating the arm.

35. In a machine for bending temples, the combination with the frame, of a mandrel upon the frame, a slide supporting rod upon the frame adjacent the mandrel, a drawing slide upon the rod, a second slide mounted in the frame movable towards and away from the mandrel, bending rolls upon the second slide, spring means in the frame for forcing the slide away from the mandrel, a cam pivotally mounted upon the frame and adapted to contact with the slide, a lever arm upon the cam, and a rod connecting the lever arm with the drawing slide. 110 115 120

36. In a machine for bending temples, the combination with the frame, of a mandrel upon the frame, a rod upon the frame, a drawing slide upon the rod, a second slide in the frame, bending rolls upon the second slide, a cam upon the frame adjacent the slide, an arm upon the cam, a rod connecting the arm and slide, and means upon the arm 125



engaging the connecting rod for adjusting the rod and drawing slide with relation to each other.

37. In a machine for bending temples the combination with the mandrel and bending rolls coöperating therewith, of a drawing slide movable towards and away from the mandrel, and means upon the slide for holding the temple base transversely inclined with relation to the mandrel.

38. In a machine for bending temples, the combination with the mandrel and bending rolls coöperating therewith, of a drawing slide movable towards and away from the mandrel, a transversely inclined bearing surface upon the slide, and means for holding the base of the temple against the bearing surface.

39. In a machine for bending temples, the combination of a mandrel for the blank and means for maintaining the blank in contact with the mandrel, of means for both drawing the blank over the mandrel and for imparting a lateral inclination to the resulting bend.

40. In a machine for bending temples, the combination with a member across which the blank is adapted to be drawn, of means for drawing the blank across said member, and means inclined with relation to the member for forcing the blank against said member.

41. In a machine for bending temples, the combination with a curved member across which the blank is adapted to be drawn, of means for drawing the blank while in contact with said member, and means operated by the drawing means for forcing the blank against said member.

42. In a machine for bending temples, the combination with a member across which the blank is adapted to be drawn, of means inclined with relation to the axis of the

member for longitudinally drawing the blank across said member, and means for forcing the blank against said member.

43. In a machine for bending temples, the combination with a curved member across which the blank is adapted to be drawn, of means inclined with relation to the axis of the curved member for longitudinally drawing the blank across said member, and means for forcing the blank against said member.

44. In a machine for bending temples the combination with a member across which the blank is adapted to be drawn, a pivoted slide supporting rod adjacent said member, and a drawing slide movable upon the rod towards and away from said member.

45. In a machine for bending temples, the combination with a member across which the blank is adapted to be drawn, of means for drawing the blank, and means extending above the line of travel of the blank for pressing the blank against said member during the drawing movement.

46. In a machine for bending temples, the combination with a member across which the blank is adapted to be drawn, of means for drawing the blank, and reciprocating means for forcing the blank against said member.

47. In a machine for bending temples, the combination with a member across which the blank is adapted to be longitudinally drawn, of means for drawing the blank, and rotary means operated by the drawing means for forcing the blank against said member.

In testimony whereof I have affixed my signature in presence of two witnesses.

SVAN NORDEN.

Witnesses:

HORATIO E. BELLOWES,  
WALTER E. GOODWIN.