A. FEINSTEIN.

MACHINE FOR FORMING WIRE HAT FRAMES.

APPLICATION FILED APR. 19, 1909.

947,328. Patented Jan. 25, 1910.

Fig. 1.

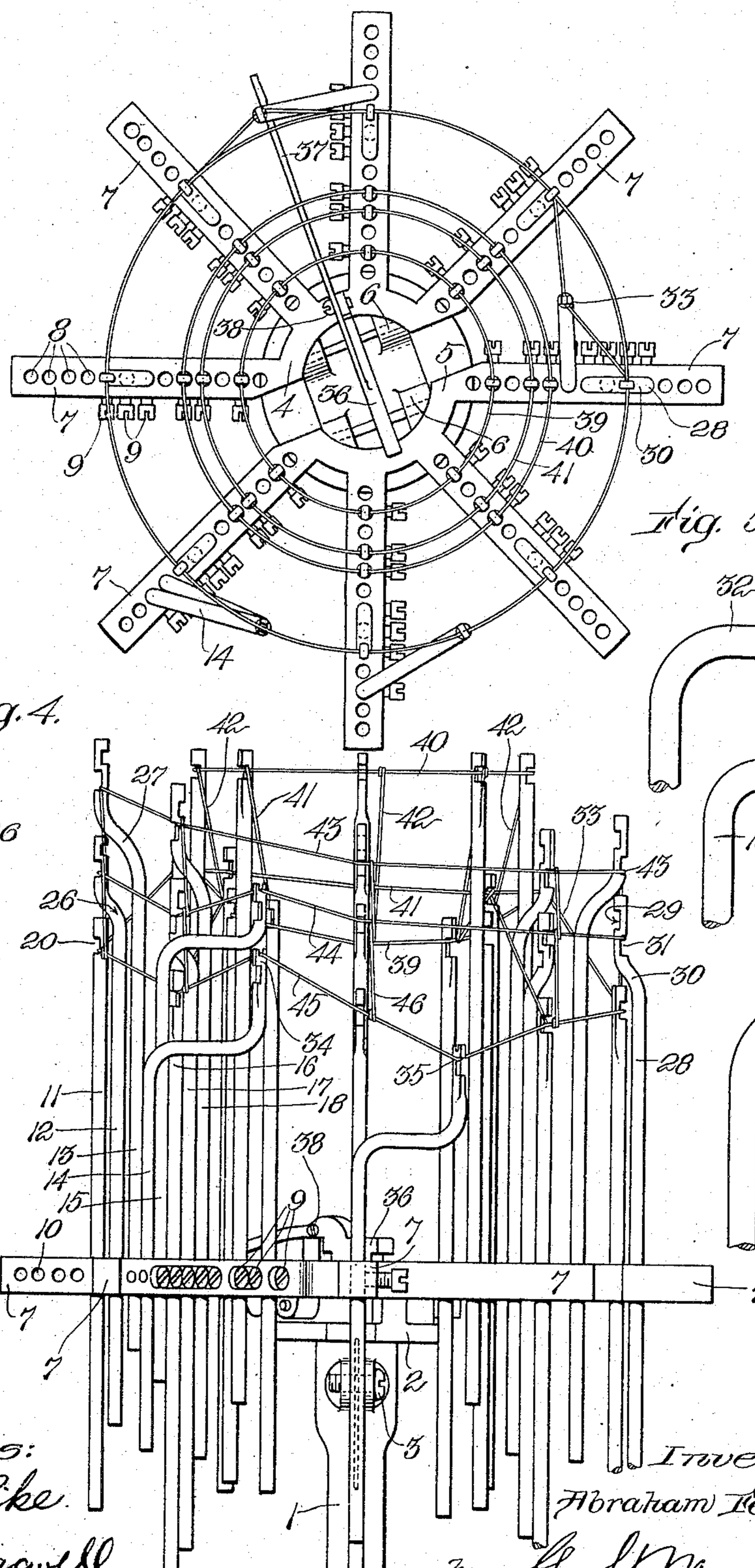

Fig. 3.

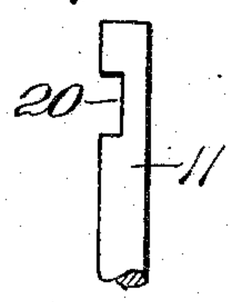

Fig. 4.

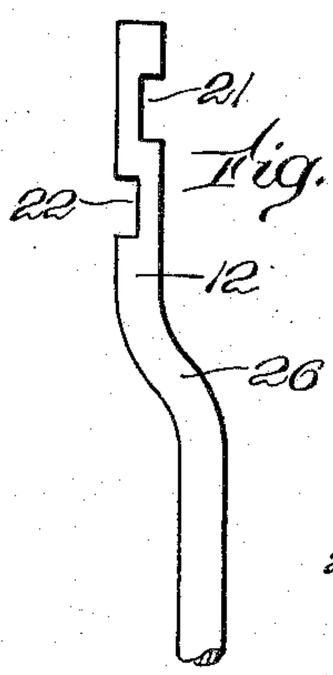

Fig. 2.

Fig. 5.

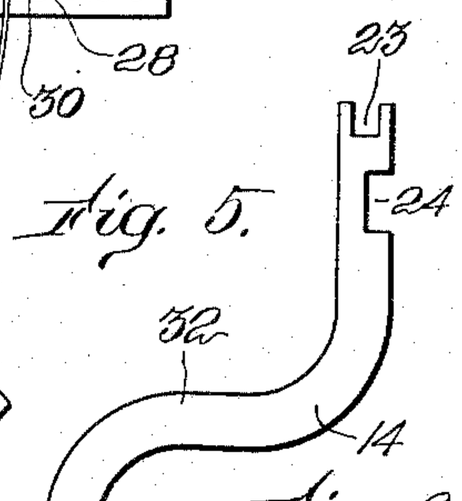

Fig. 6.

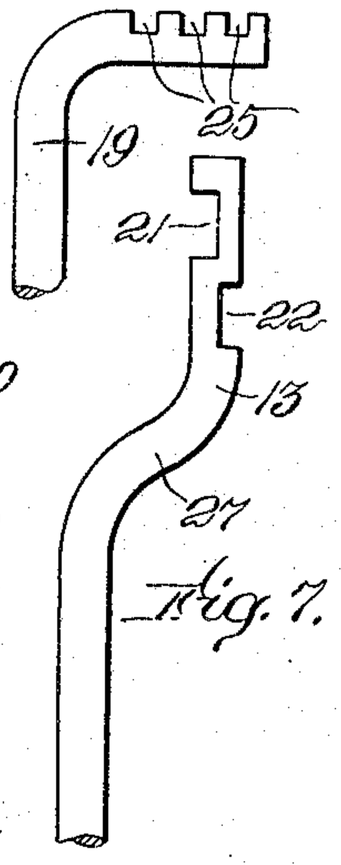

Fig. 7.

Witnesses:
Wm. J. Pike.
Edward Maxwell

Inventor:
Abraham Feinstein,
by Geo. S. Maxwell,
Attorney.

UNITED STATES PATENT OFFICE.

ABRAHAM FEINSTEIN, OF REVERE, MASSACHUSETTS.

MACHINE FOR FORMING WIRE HAT-FRAMES.

947,328. Specification of Letters Patent. **Patented Jan. 25, 1910.**

Application filed April 19, 1909. Serial No. 490,673.

To all whom it may concern:

Be it known that I, ABRAHAM FEINSTEIN, a citizen of the United States, and resident of Revere, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Machines for Forming Wire Hat-Frames, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

The object of my present invention is to provide a shaping machine for wire hat frames, which may be readily adjusted with precision to any of the special or unusual shapes of hats according to the changing fashion, and which, when once adjusted, will remain in said adjustment for any desired number of hats, thereby enabling the operator not only to produce the frames rapidly, but to produce them uniformly.

I employ supporting posts, rods, or members and a frame for adjustably receiving said posts or rods, the same as heretofore, but I provide certain of the posts or rods of an angular form, certain other posts or rods being straight, and I provide these various posts or rods with a variety of notches or holding means for the wire whereby the wire may readily be carried from post to post to form a straight crown, inclined crown, flat brim, turn up brim, turn down brim, combination or variation of any of these styles, or a reëntrant angle brim, mushroom brim, or in fact practically any other shape desired.

Heretofore it has been customary to make the frame more or less regular in shape on the machine and then crimp it here and there as desired by hand, the result being that one operator would crimp strictly according to pattern while another operator would vary, making some hats nearly right and others far from right.

My invention aims to produce the hat frames always exactly right. It aims to provide a machine which, when once set up by a skilled workman, can thereafter be operated by an unskilled operator.

In the drawings, in which I have shown a preferred embodiment of the invention, Figure 1 is a top plan thereof; Fig. 2 shows the same in side elevation; and Figs. 3–7 are fragmentary elevations of the upper ends of posts, showing different constructions used in carrying out my invention.

The supporting portion of the machine, including the central standard 1, base 2 held by a clamp 3, the opposite rims or flanges 4, 5 pivoted at 6, and the radial arms 7 containing vertical post holes 8 in which the wire-supporting posts are adjustably secured by set screws 9 operating in lateral screw openings 10, may be and preferably are the same as contained in my copending application Serial No. 424,199, filed March 30, 1908 and therein claimed, although I do not intend to restrict my present machine to these precise constructional details, as the same may be considerably varied.

My present invention relates mainly to the posts and their actual relation in the machine whereby the capacity of the machine is largely increased to manufacture a wide variety of shapes, sizes, and styles, while at the same time practically eliminating the danger of lack of uniformity in successive hats when made by a relatively unskilled operator. By this I mean that my machine, when once set or adjusted by the foreman or machine-setter (who is a skilled man), may thereafter be used repeatedly by an ordinary unskilled operator without any liability of having the hats which he makes out of shape or incorrect.

In the various holes 8 I mount a series of posts 11, 12, 13, 14, 15, 16, 17, 18, 19, etc. Some of these posts, as for instance the posts 11, are provided with wire-holding means, as for instance notches 20 on one side (Fig. 3), while others have wire-holding means, such for instance as notches 21, 22 on opposite sides (Figs. 4, 7), and others a top wire-holding means, such for instance as a notch 23 on the top and another 24 on the side (Fig. 5), and others a series of top notches or other wire-holding means 25 (Fig. 6). In some instances the posts are straight, as for instance the post 11, while others of the posts are bent or offset, as for instance the posts 12, 13, 14, 15, 19. This offsetting of the posts is preferably accomplished at their upper ends so that, when placed in alinement facing in the same direction and in the same plane, and adjusted successively higher as ordinarily required for hat-frame building, they will not interfere with each other but will stand as best shown at the extreme left of Fig. 2. Also preferably certain of the posts are offset the distance of two successive holes 8 apart as indicated at 26 so that, when placed as shown by the

posts 11, 12 at the left of Fig. 2, their wire-holding notches will come in vertical alinement over the center of the next hole 8, or in vertical alinement with the wire-holding notch 20 of the post 11 as shown in said Fig. 2, and others of the posts are offset as indicated at 27 a distance corresponding to the spacing apart of three successive holes 8, so that, when arranged as shown at the left of Fig. 2, the wire-holding notches thereof are in vertical alinement with the second hole ahead, *i. e.* with the wire-holding notches of the posts 11, 12 as shown at the extreme left of Fig. 2. The arrangement of the notches may be considerably varied for accomplishing the different effects required in hat-frame making, as for instance in the notches shown in Fig. 4 the top notch 21 opens toward the offset and the lower notch 22 opens away from the offset, whereas in the similarly offset rod 28 at the extreme right of Fig. 2 I have shown a top notch 29 opening away from the offset 30 and a lower notch 31 opening toward said offset. This permits me to get a still further flexibility or capacity of adjustment by adjusting a series of posts all turned in the same direction, as shown for instance by the first three posts at the extreme right, Fig. 2, and yet have their holding notches all in vertical alinement. In Fig. 5 I have shown an extreme deflection at 32, these posts which have top notches, as for instance at 23, being intended primarily to be so placed in the arms 7 as to have their offset portions extend obliquely thereto for special or unusual shapes of hat frames. For instance at 33 I have shown the wire as carried upwardly and inwardly so as to make a reëntrant angle in the hat. At 34 I have shown the same kind of a post arranged to bend or position the wire to form an upwardly extending angle but without deflecting the wire either inwardly or outwardly, and at 35 I have shown such a post arranged to deflect the wire downwardly, but not either inwardly or outwardly. This shape in a hat is what is called in the trade a "mushroom", and has heretofore always been made by hand after a plain frame has been completed on a machine, this subsequent hand crimping or bending of the wire resulting in distorting or decreasing the size of that turn of the wire around the hat frame. This has heretofore been the case with all upward, downward, inward, or outward bends provided in a hat frame; all such bends have been made by hand and have introduced uncertainty and lack of uniformity in the frames, so that two hat frames have seldom been shaped alike in practice. By my invention the hand crimping is all eliminated and the length, angle, and position of the crimp or bend are positively and uniformly controlled by the offset posts. The top-notch posts, especially those which contain the notches 23, are also used for making what are known as "split" hats, *i. e.* hats having at the back side a wedge-shaped cavity or bend which gives them the appearance of being folded in or "open" at the back. Such a construction is indicated at 33, being the common construction of hats for old ladies. The post 19 which contains a series of top notches all in the same horizontal plane is used to permit the making of hats so that they can be packed in quarter dozens by nesting or setting one in another, in styles where the top of the hat is approximately the same size as the bottom. The notches 25 are spaced apart just enough so that the three successive hats (or it may be more) differ just enough in size to permit them to be nested snugly together. Only one of these posts is used for a given complete turn of wire, so that although the distance from the first notch 25 appears to be considerable in Fig. 6, the actual difference in size of the respective frames made thereon is very slight, inasmuch as this difference is distributed throughout the entire circle or complete turn of wire. To hold the two rims 4, 5 apart locked in normal horizontal working position, I preferably employ a locking block or wedge piece 36 having shoulders at its opposite ends (see Fig. 2) to wedge against the inner surfaces of said members 4, 5, said block being carried by a lever 37 shown as pivoted at 38 on the member 4.

In use, the skilled machine-setter or foreman adjusts each operator's machine according to the hat frame which the given operator is to make. Thereafter the operator simply bends the wire around the posts as set and cannot well go wrong, inasmuch as he simply follows the notches or wire-holding devices in succession in the ordinary manner of making hat frames, beginning at the head-size wire 39 and crown wire 40 (with an intermediate wire 41 for firmness if desired), which, after being formed, are connected by usual cross wires 42 and then he forms the brim wires 43, 44, 45, which, when formed, are connected in usual manner by cross wires 46, etc. according to the style of the hat. As the wiring of the hat frame itself is the same with my machine as with others or by hand, it is unnecessary for me to go into any further explanation thereof. It will be evident that because of the provision of means for holding the posts in relatively immovable position and having said posts formed with varying offsets and differently arranged wire-retaining means, such as the notches shown, a practically endless variety of patterns or styles of hat frames may be made with one and the same machine. In other words, I provide a machine having adjustable means for forming

inwardly extending angles or bends, means for forming outwardly extending angles or bends, means for forming upwardly extending angles or bends, means for forming downwardly extending angles or bends, means for bringing a vertical series of turns of wire into one and the same vertical plane one above the other, or at practically any desired flaring relation with relation to each other one above the other. Other capabilities of variation have already been mentioned, and still others will be apparent to those skilled in the art. When the hat frame has been formed the operator lowers the locking handle 37, thereby permitting the opposite portions of the support to be raised so as to collapse the frame supporting posts, thereby releasing the frame. It will be seen that all the wire-holding means or notches are so positioned that when the posts are thus collapsed toward each other the wire is automatically disengaged.

As already mentioned, I do not intend to restrict my invention to the precise constructional details herein shown, as I regard my invention in many respects as broadly new, and therefore wish it understood that my invention is not limited otherwise than as expressed in the following claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A hat-frame making machine, comprising a series of horizontal supports each provided with a series of holes spaced at equal distances apart, a series of wire-supporting posts snugly fitting said holes, certain of said posts having their upper ends offset from their main vertical axis a distance corresponding to a multiple of the distance between the centers of successive holes.

2. A hat-frame making machine, comprising a series of horizontal supports each provided with a series of holes spaced at equal distances apart, a series of wire-supporting posts snugly fitting said holes, certain of said posts having their upper ends offset from their main vertical axis a distance corresponding to a multiple of the distance between the centers of successive holes, the offset distance of certain of said posts being of different multiples of said distance from center to center of said holes.

3. In a hat-frame making machine, a wire-retaining post having a vertical body portion and a laterally extending top end provided with a series of wire-holding means for receiving wires vertically.

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

ABRAHAM FEINSTEIN.

Witnesses:
WM. J. PIKE,
M. J. SPALDING.