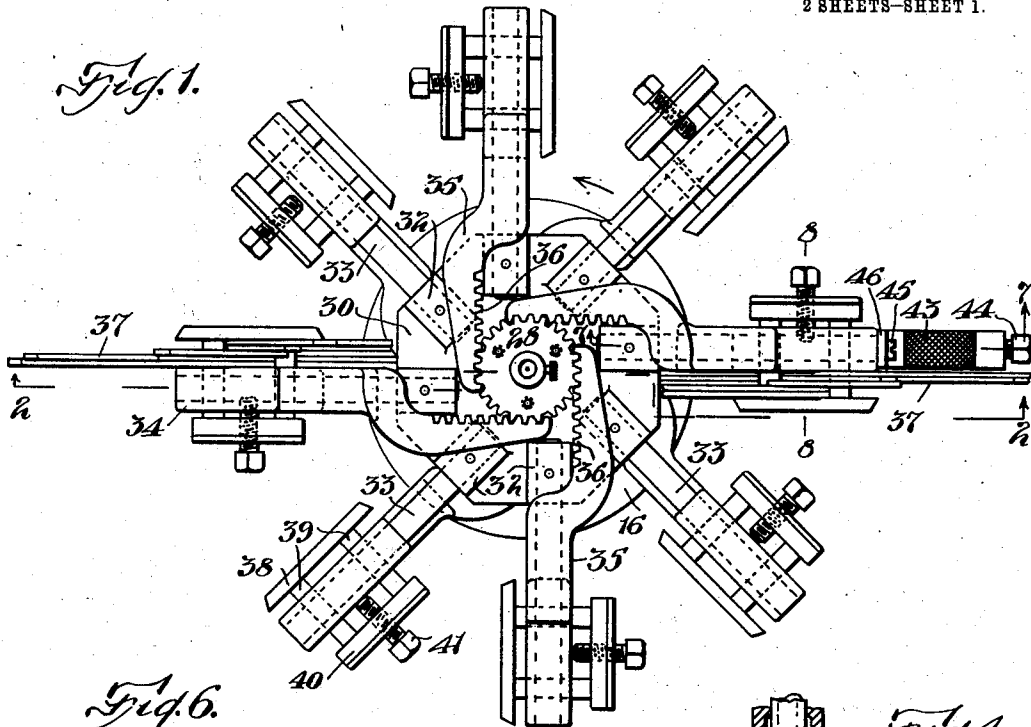


H. SILBERT & S. WACHTEL.  
MACHINE FOR MAKING HAT FRAMES.  
APPLICATION FILED FEB. 25, 1911.

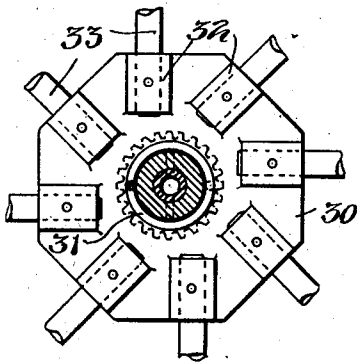
1,011,382.

Patented Dec. 12, 1911.

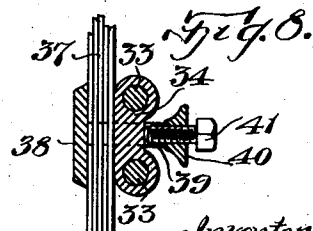
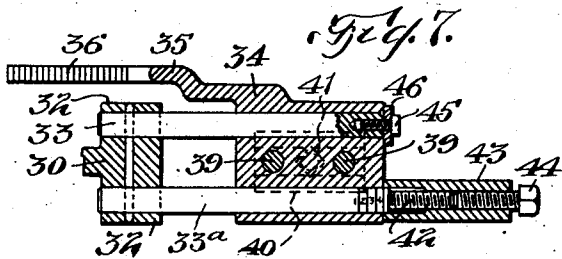
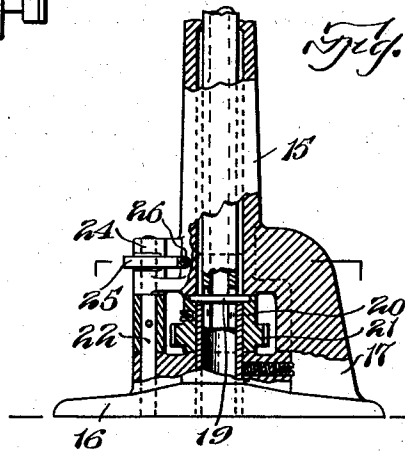
2 SHEETS-SHEET 1.



*Fig. 6.*

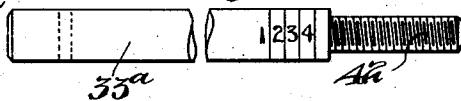


*Fig. 4.*



Witnesses:  
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*Fig. 9.*



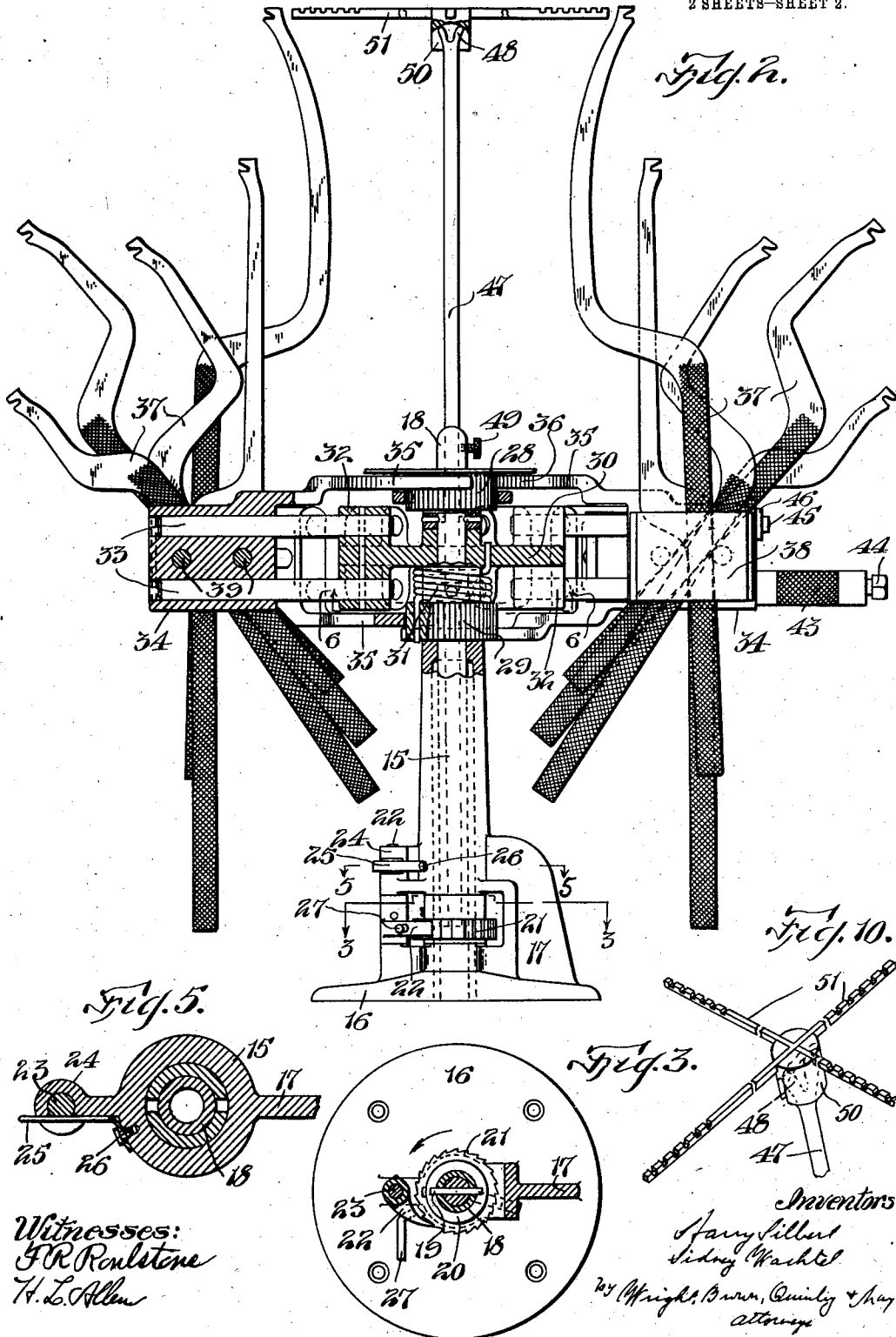
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2 SHEETS-SHEET 2.



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# UNITED STATES PATENT OFFICE.

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CORPORATION OF MASSACHUSETTS.

## MACHINE FOR MAKING HAT-FRAMES.

1,011,382.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed February 25, 1911. Serial No. 610,825.

*To all whom it may concern:*

Be it known that we, HARRY SILBERT and SIDNEY WACHTEL, of Boston, in the county of Suffolk and State of Massachusetts and of Brookline, in the county of Norfolk and State of Massachusetts, respectively, have invented certain new and useful Improvements in Machines for Making Hat-Frames, of which the following is a specification.

This invention relates to machines for making wire frames for ladies' hats and refers particularly to the type of such machines shown in our application filed September 28, 1910, Serial No. 584,234.

Such machines employ a circular series of groups of adjustable pattern-forming rods or arms around which the operator wraps or binds the wire.

One of the objects of the present invention is to provide a machine of this character having improved radial supports for the members or units of the circular frame.

Another object is to provide a machine of this type having a central support for the circular frame so constructed as to enable the frame to be either freely rotated in either direction, or to be held so that an attempt to rotate it in one direction will collapse the frame.

Another object is to provide an improved structure of the pattern-forming rods or arms of each group which will prevent them from slipping out of their adjusted relative positions.

Another object is to provide an improved structure of clamp for the arms of each group comprising a circular form.

Another object is to provide improved mechanism for automatically collapsing the circular frame when shifted in one direction about its axis of rotation.

Further objects are to provide improved details of construction tending to facilitate the operation of making the hat frames, all as will be more fully hereinafter pointed out.

To these ends the invention consists in the construction and combination of parts substantially as hereinafter described and pointed out in the claims.

Of the accompanying drawings:—Figure 1 is a plan view of the machine; Fig. 2 represents a section on line 2—2 of Fig. 1;

Fig. 3 represents a section on line 3—3 of Fig. 2; Fig. 4 represents a vertical section through a portion of the standard and also part of the spindle; Fig. 5 represents a section on line 5—5 of Fig. 2; Fig. 6 represents a section on line 6—6 of Fig. 2; Fig. 7 represents a section on line 7—7 of Fig. 1; Fig. 8 represents a section on line 8—8 of Fig. 1; Fig. 9 is a detail side elevation of one of the elements of the wire-adjusting mechanism, hereinafter described; and Fig. 10 is a perspective view of a part of the centering mechanism, hereinafter described.

Similar reference characters indicate the same or similar parts in all the figures.

The frame of the machine comprises a tubular standard 15 having a base 16 which may be secured to any suitable bench or other support. An arm or bracket 17 connects the tubular standard and base, but with a space between the base and the lower end of the tubular standard to receive the ratchet, hereinafter described.

Mounted in the standard 15 is a spindle 18 which is hollow to receive the stem of the centering device, hereinafter described. The lower end of the spindle 18 is split or bifurcated, as best shown in Fig. 4, so as to straddle a pin 19 supported by the hub 20 of a ratchet wheel 21, said ratchet wheel having the lower portion of its hub extending down into a bearing formed in the base 16. By means of the pin 19 and the straddling foot of the spindle 18, the ratchet and the spindle are locked together so as to rotate only in unison, and the spindle and mechanism supported thereby, may be bodily removed from the tubular standard 15. The ratchet wheel 21 is engaged by a pawl 22 secured to a small vertical spindle 23 mounted in a riser from the base 16 and in an ear 24 projecting laterally from the tubular standard. An opening is formed in said ear 24, and one side of the spindle 23 is flattened, as best shown in Fig. 5. A spring 25 secured by a screw to the standard 15, lies in the opening in the ear 24, and bears against the flattened side of the pawl spindle 23 so as to yieldingly hold the pawl in position to engage the teeth of the ratchet wheel. When the pawl is in the position shown in Fig. 3, the spindle 18 and the

mechanism carried thereby can only be rotated in the direction indicated by the arrows in Figs. 1 and 3. The pawl 22 is provided with a handle 27 by means of which  
 5 the pawl and its spindle can be swung around to remove the pawl from operative engagement with the ratchet. When the pawl is swung outwardly to a position far enough to carry the flattened side of the spindle 23  
 10 away from the spring 25, the pawl will remain in disengaged position.

Secured to the spindle 18, above the upper end of the standard 15, are two pinions 28 and 29, and loosely mounted on said  
 15 spindle between the two pinions is a head 30. A spring 31 is coiled about the hub of the pinion 29 and at one end is secured to said pinion and at the other end is secured to the head 30. This spring is coiled in  
 20 such direction as to always exert a tendency to rotate the head 30 in the direction of the arrow in Fig. 1, if said head has been forcibly moved in the reverse direction while the pawl 22 is in engagement with the  
 25 ratchet wheel for a purpose hereinafter explained.

The head 30 is formed or provided with a series of upper and lower lugs 32 in which are pinned or otherwise secured a series of  
 30 pairs of radial arms 33, which arms will be hereinafter referred to as radial guides, although they are not exactly radial to the axis of rotation. But they guide the clamped groups of arms in their substantially radial movements for adjustment for  
 35 sizes or removal of hat frames, as hereinafter described. The two guides 33 of each pair project one above the other and enter sockets in slides 34, each of said slides  
 40 having an arm 35 which is offset sufficiently from the plane of the slide to enable the rack teeth 36 of said arms to engage the pinions. As shown by comparing Figs. 1 and 2, four of the slides have their rack  
 45 arms engaging the upper pinion 28 and the other four slides have their arms engaging the lower pinion 29. This divides and balances the structure, and enables us to dispense with the wide gear or pinion of our  
 50 application #584,234, heretofore referred to. The operation of this part of the mechanism is similar to that in said earlier application, in that although the pinions may be rotated in one direction with the spindle  
 55 and the circular series of guides and slides, yet when the set is rotated in the other direction to a slight extent, the pawl 22, being in engagement with the ratchet wheel 21, the slight swinging of the slides and their  
 60 rack arms around the now stationary pinions 28, 29 will result in contracting all of the slides toward the center of the head.

Each slide 34 has clamping mechanism for a plurality of flat arms or strips 37, the  
 65 side faces of the lower ends or portions of

which are milled or roughened, as shown in Fig. 2, so that when the arms are overlapped and clamped, as shown by comparing Figs. 2 and 8, the arms of each group will be  
 70 firmly held in the relative positions to which they have been adjusted. The clamping mechanism for each slide 34 comprises a plate 38 having a flat inner face which may be milled or roughened if desired, said plate  
 75 38 having two pins rigid therewith and projecting through guiding apertures in the slide 34 between the upper and lower guides 33, the outer ends of said pins being connected by a bar 40. Mounted in said bar 40  
 80 between the two pins 39 is a screw 41, the inner end of which is adapted to bear against the outer face of the slide 34.

It will now be readily understood that when a group or series of arms 37 are placed between the flat opposing faces of the plate  
 85 38 and slide 34, and the screw 41 turned inwardly, the plate 38 is drawn up against the group or series of arms so as to clamp the said arms firmly. By the milling or roughening of the side faces of the arms,  
 90 the first setting up of the clamp may be made just sufficient to hold the arms from slipping and yet permit them to be swung or adjusted or slid vertically to get them in  
 95 proper position, after which a further tightening up of the screw 41, will bind the arms tightly in place.

The upper ends of the arms are formed with notches, preferably of the form illustrated in Fig. 2, in which notches the wires  
 100 of the hat frames are placed in the manner well understood by those familiar with machines for making wire hat frames.

During the making of the frame, the mechanism may be rotated in either direction  
 105 freely, if the pawl 22 is turned out of engagement with the ratchet wheel 21. But when the pawl is in engagement with said ratchet wheel, then the pattern or form can only be rotated completely in the direction  
 110 of the arrow in Fig. 1. The moment that any rotation is effected in the opposite direction, the slides and their groups of clamped arms will all move inwardly toward the center of the machine because the pinions  
 115 which are engaged by the right arms of the slides are held from rotation. The spring 31 permits sufficient movement in the last-mentioned direction to effect the collapsing of the entire form, and then the instant the  
 120 operator releases the form, the spring 31 carries the head around in the proper direction to again project the slides to their outermost positions.

In order that the limit of outermost position of the slides carrying the groups of  
 125 arms may be adjustably determined, the lower guide 33 of one of the pairs of guides is elongated, as shown in Fig. 9. To distinguish this guide from the others, it is  
 130

designated 33<sup>a</sup>. Its outer end is reduced in diameter and is threaded as at 42 to receive an elongated internally threaded sleeve 43. A screw 44 is mounted in the outer end of the sleeve 43 and serves to lock the sleeve 43 in adjusted position by being screwed in until its inner end bears tightly against the outer end of the elongated guide 33<sup>a</sup>, as shown in Fig. 7.

It will now be understood that by setting the sleeve 43 at the desired point on the threaded portion 42 of guide 33<sup>a</sup>, the inner end of said sleeve will serve as an abutment to prevent the slide 34 from moving outwardly. And since all of the slides are connected, by means of their rack arms and the pinions so that they must shift in unison, any outward limitation of the movement of one of the slides affects also all of the others. This adjusting mechanism enables the machine to be set for varying sizes of hats, and the exact sizes can be determined by a greater or lesser number of scale marks indicated at 1, 2, 3, 4, in Fig. 9. Adjustment of the sleeve 43 until its inner end coincides with either one of said scale marks will insure uniformity of all of the hat frames made on the machine until that adjustment is changed.

As shown in Fig. 7, the outer end of the upper guide 33 may be provided with a screw 45, a washer 46 being interposed between the head of said screw and the outer end of the slide 34 so that the said slide can never be shifted outwardly beyond its outer predetermined limit of movement regardless of whether the adjusting sleeve is being manipulated or not.

When the machine is being set to a certain pattern form, difficulty is sometimes experienced in centering the pattern. As shown in Figs. 1 and 2, the spindle 18 is hollow to a sufficient point to admit a slender rod 47, the upper end of which is forked as at 48, said rod 47 being held in elevated position by suitable means as a set screw 49. When a complete pattern form, including both crown and rim is being utilized, the rod 47 will be adjusted to bring its fork 48 to a proper height to engage the center crossing wires of the pattern so as to support said pattern while the arms 37 are being adjusted to that pattern. Some frames are made which have no crowns, and in such case it becomes desirable that the "head size" wire of the pattern shall be centered. For this purpose we provide a block 50 having a plurality of arms 51 projecting therefrom, the upper surfaces of said arms near their outer ends being notched or recessed, the said block 50 having its under side so formed as to engage and be held upon the forked upper end of the rod 47 in such manner that the said block and its arms 51 will remain in proper position when said block is simply

dropped upon the forked end of said block 50. With this device in position, the notches in the outer ends of the arms 51 are employed for supporting the "head size" wire of the brim pattern that is being employed, so as to support said brim pattern while the arms 37 are being adjusted thereto to prepare the machine for the making of duplicates of that pattern.

We claim:—

1. A machine of the character described comprising a form consisting of a series of groups of arms, and clamps for said arms, the arms of the groups overlapping and having flat roughened faces to engage each other to prevent the arms from slipping away from adjusted position.

2. A machine of the character described comprising a vertical spindle having a ratchet, a bearing for said spindle, a pawl movable to and from operative engagement with said ratchet, a series of radially movable slides having means for clamping form arms, and connections whereby rotation of the form in one direction will collapse it.

3. A machine of the character described comprising a rotatably mounted head having a plurality of pairs of radial guides, slides mounted on said guides, clamp plates having guide pins passing through said slides, and means for forcibly moving said plates toward the slides to clamp the forming arms in position.

4. A machine of the character described comprising a rotatably mounted head having a plurality of pairs of radial guides, slides mounted on said guides, clamp plates having guide pins passing through said slides, a bar connecting the ends of the pins of each plate, and a screw passing through said bar and bearing against the outer face of the slide.

5. A machine of the character described comprising a tubular standard, a spindle mounted therein and having a forked lower end, a ratchet having means for separable engagement with the lower end of said spindle, a pawl to cooperate with said ratchet, and a head carried by said spindle and having a plurality or series of groups of forming arms.

6. A machine of the character described comprising a spindle having pinions secured to it, a head rotatable on said spindle between the pinions, guides carried by said head, arm clamps adjustable on said guides, said clamps having rack arms engaging the pinions, and a spring connecting the head with one of said pinions.

7. A machine of the character described comprising a rotatable head having guides, arm clamps mounted on said guides and movable toward and from the axes of the machine, one of said guides having a screw-threaded projection, a sleeve mounted on

said projection, and means for securing said sleeve in adjusted position to limit outward movement of the slides.

5 8. A machine of the character described comprising a spindle having a pinion, a head rotatable on said pinion and having substantially radial guides, slides mounted on said guides and having rack arms engaging the pinion, one of said guides having a projection beyond the slide mounted thereon, and an adjustable stop carried by  
10 said projection to control the limit of outward movement of the slides.

9. A machine of the character described  
15 having a centering device comprising a rod having a removable block provided with

laterally extending arms to support a pattern.

10. A machine of the character described having a centering device comprising a rod 20 having a forked upper end, and a block having radial arms provided with notches, the said block being formed to removably fit the forked end of said rod.

In testimony whereof we have affixed our 25 signatures, in presence of two witnesses.

HARRY SILBERT.  
SIDNEY WACHTEL.

Witnesses:

A. W. HARRISON,  
P. W. PEZZETTI.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."