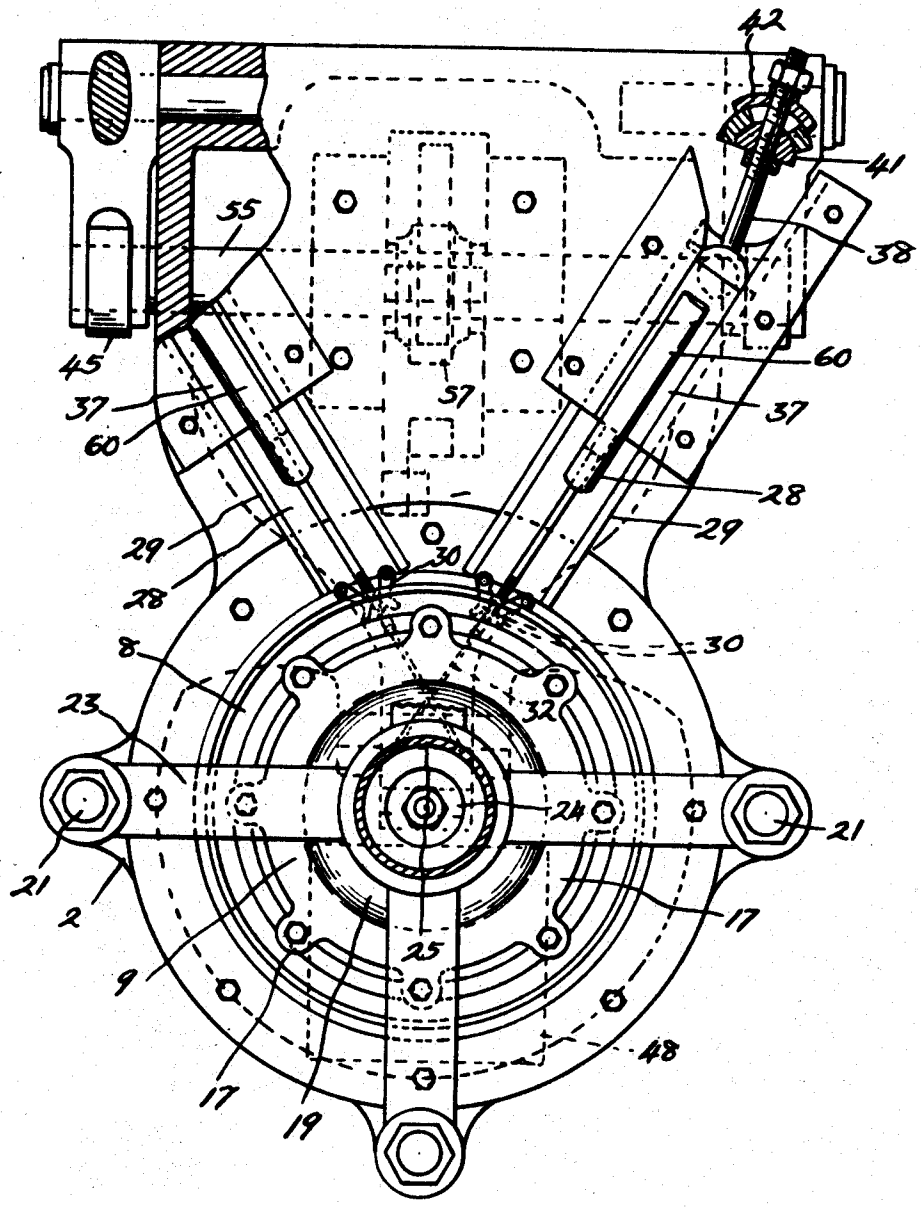
Sept. 6, 1932. J. SNEED 1,876,356

APPARATUS FOR ASSEMBLING WIRE WHEELS

Filed Nov. 9, 1931 4 Sheets-Sheet 1

Fig 1.



INVENTOR

John Sneed

BY Whittemore Hulbert & Whittemore Belknap

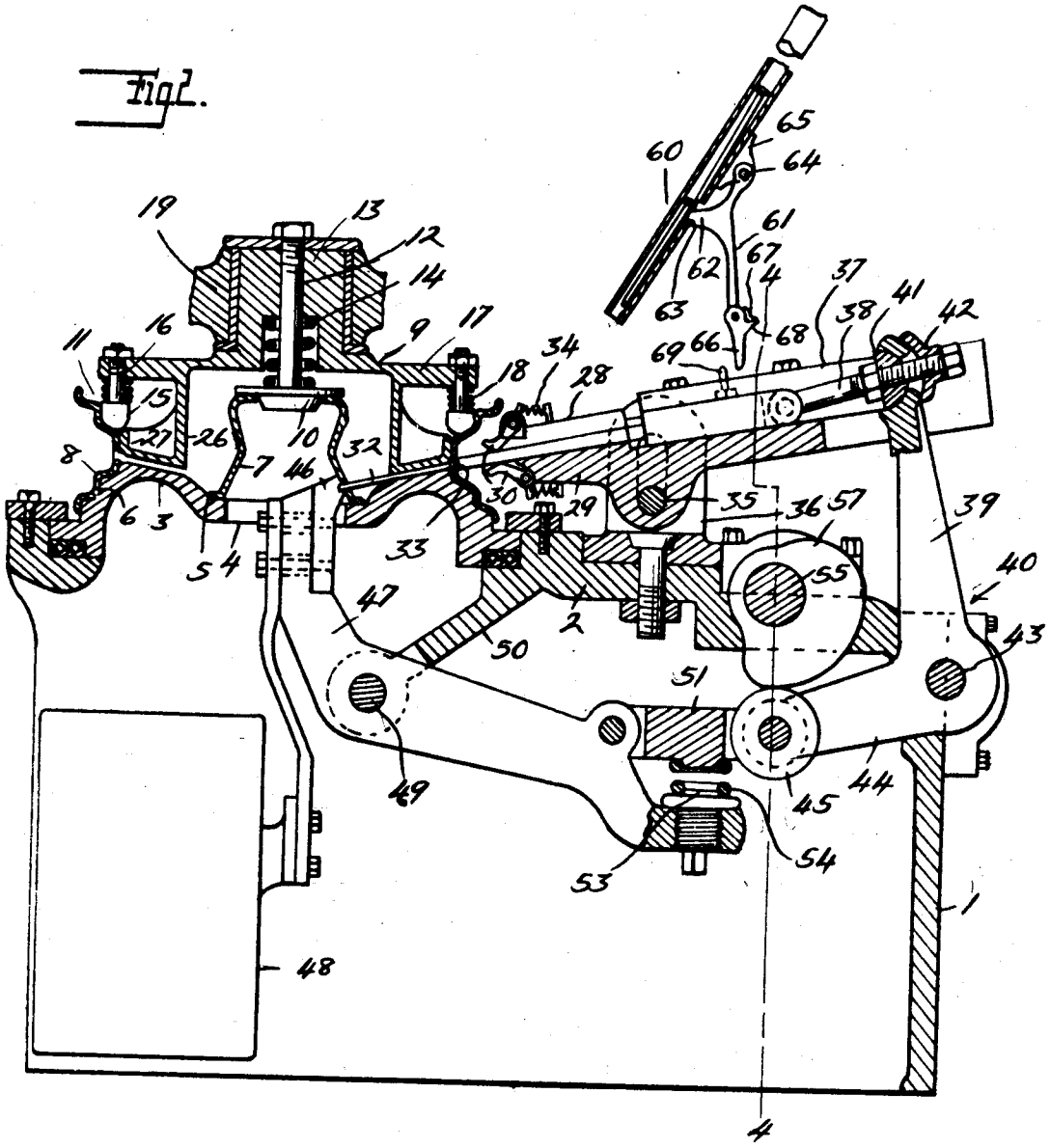
ATTORNEYS

Sept. 6, 1932. J. SNEED 1,876,356

APPARATUS FOR ASSEMBLING WIRE WHEELS

Filed Nov. 9, 1931 4 Sheets-Sheet 2

Fig 2.



INVENTOR

John Sneed

BY Whittemore, Hubbard & Whittemore & Belknap

ATTORNEYS

Sept. 6, 1932. J. SNEED 1,876,356

APPARATUS FOR ASSEMBLING WIRE WHEELS

Filed Nov. 9, 1931 4 Sheets-Sheet 3

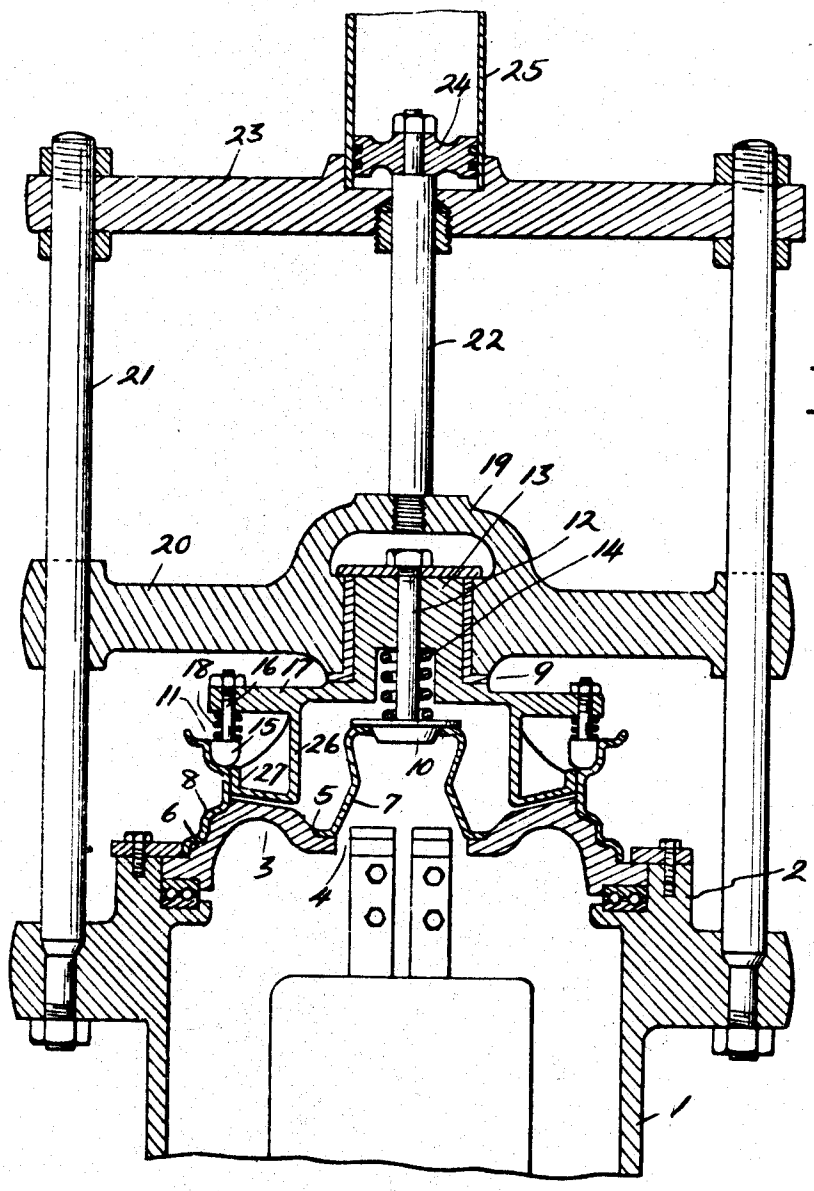


Fig. 3.

INVENTOR

John Sneed

BY

Whittemore Hubbard Whittemore & Belknap

ATTORNEY

Sept. 6, 1932. J. SNEED 1,876,356

APPARATUS FOR ASSEMBLING WIRE WHEELS

Filed Nov. 9, 1931 4 Sheets-Sheet 4

Fig 4.

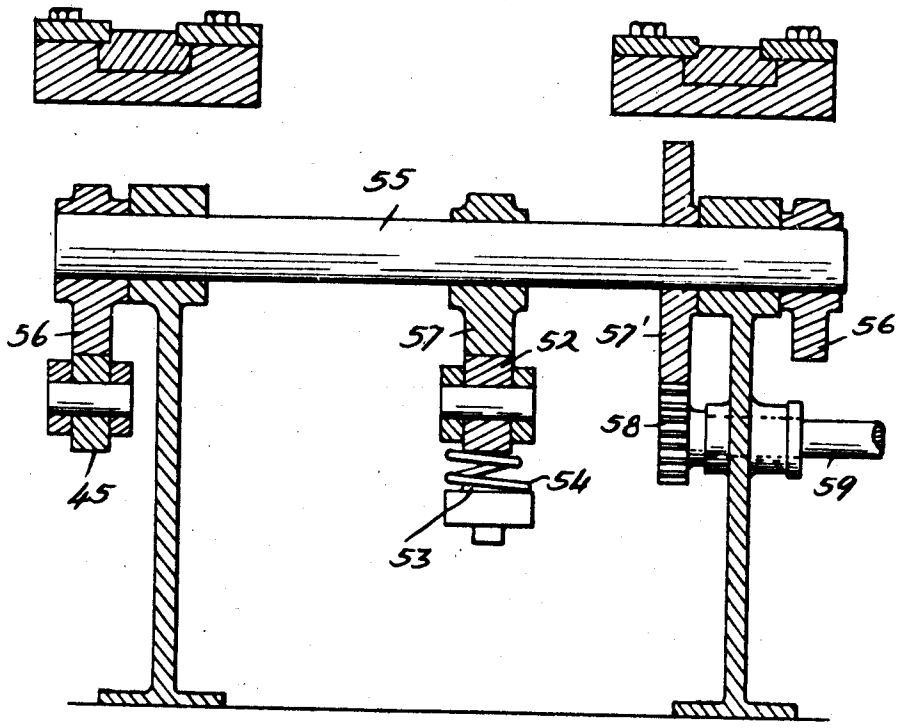


Fig 5.

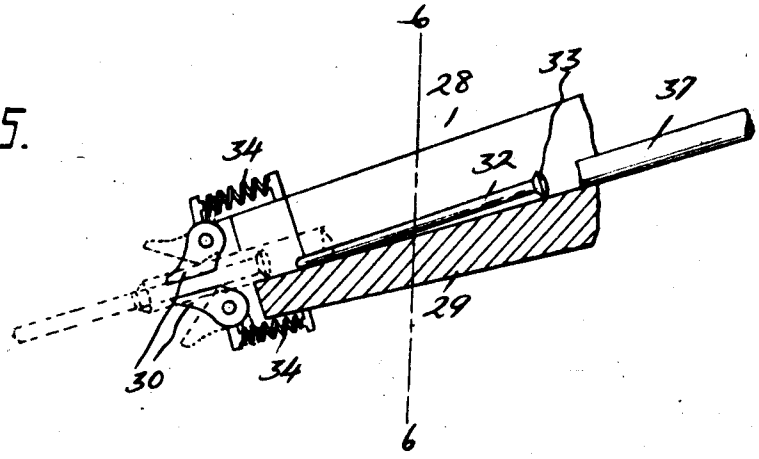
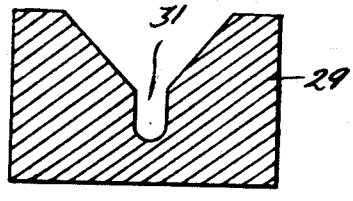


Fig 6.



INVENTOR

John Sneed

BY Whittemore Hulbert & Whittemore Belknap

ATTORNEYS

Patented Sept. 6, 1932

1,876,356

UNITED STATES PATENT OFFICE

JOHN SNEED, OF DETROIT, MICHIGAN, ASSIGNOR TO KELSEY-HAYES WHEEL CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF NEW YORK

APPARATUS FOR ASSEMBLING WIRE WHEELS

Application filed November 9, 1931. Serial No. 573,937.

The invention relates to apparatus for assembling wheels and refers more particularly to apparatus for assembling wheels of that type having wire spokes. One of the objects of the invention is to provide an improved apparatus by means of which the spokes are assembled with the hub and rim members of the wheel and connected thereto. Another object is to so construct the apparatus that it operates automatically. A further object is to so construct the apparatus that it welds the spokes to one of the hub and rim members and compensates for the upsetting of the spokes while being welded. These and other objects of the invention will become apparent from the following description, taken in connection with the accompanying drawings, in which

Figure 1 is a plan view with a portion removed and another portion in section of an apparatus showing an embodiment of my invention;

Figure 2 is a vertical sectional view through Figure 1;

Figure 3 is a vertical sectional view at right angles to Figure 2;

Figure 4 is a cross section on the line 4—4 of Figure 2;

Figure 5 is an enlarged sectional view showing a spoke blank guiding means;

Figure 6 is a cross section on the line 6—6 of Figure 5.

The apparatus shown in the present instance is designed particularly for use in assembling wire wheels and comprises the base 1 having the top 2 on which is revolubly mounted the table 3. This table is provided with the central opening 4 and with the concentric seats 5 and 6 for engaging and supporting the hub member or the hub shell 7 and the rim member 8 of the wire wheel. 9 is the clamping member having the central clamp 10 and the annular series of clamps 11. The clamp 10 is engageable with an end of the hub member or hub shell 7 and has the shank 12 which is slidably mounted in the central hub portion 13 of the clamping member. 14 is a coil spring encircling the shank and adapted to yieldably force the central clamp downwardly. Each of the clamps 11 has the nose 15 engageable with a side of the rim member 8 and the shank 16 slidably engaging the top flange 17 of the clamping member. 18 is a coil spring encircling each shank 16 and yieldably forcing each clamping member 11 downwardly. The clamping member 9 is adapted to be raised and lowered by suitable means, which, as shown, comprises the cross head 19 revolubly carrying the clamping member and having the arms 20 guided by the vertical rods 21 which are secured to and extend upwardly from the base 1. The cross head is connected to the rod 22 which extends through the top 23 carried by the vertical rods 21 and is secured to the plunger 24 vertically slidable within the cylinder 25. A suitable medium, such as compressed air, may be admitted to the lower and upper ends of this cylinder, as desired.

With the arrangement as thus far described, it will be seen that the hub and rim members of the wire wheel may be mounted upon and concentrically positioned by the table and effectively clamped in place by the clamping member. The hub and rim members are provided with spoke holes through which wire spokes extend and, as a consequence, the hub and rim members are also accurately positioned peripherally relative to each other. Furthermore, the arrangement is such that the hub and rim members may be rotated as a unit by a step by step movement to provide for automatically assembling the wire spoke blanks therewith. For the purpose of guiding each wire spoke blank as it passes through the rim member into proper registration with its spoke hole in the hub member, the clamping member 9 has the depending cylindrical flange 26 which is provided with the transverse flange 27, the lower face of which is parallel to and spaced from the adjacent portion of the table 3 a sufficient distance to receive the body of the wire spoke blank.

28 is one of a pair of guides for the wire spoke blanks and comprises the body 29 and the fingers 30 pivotally mounted upon the end of the body nearest to the rim member. The body has in its upper face the longitudinally extending groove 31 which is of a size to re-

ceive and permit passage therealong of the wire spoke blanks, each of which has the body 32 and the head 33 at one end of this body. The fingers are pivotally located so that as a wire spoke blank with its head rearmost is fed along the body, its body is raised so that its axis is parallel to that of the groove 31. These fingers are yieldably urged toward each other and into engagement with the spoke blank by means of the compression coil springs 34 which are of equal strength. The body 29 is pivotally mounted at 35 upon the bracket 36 secured to the top 2 of the base 1 and the pivot is vertically adjustable to properly align the body and, more particularly, its groove and the fingers 30 with the spoke holes in the hub and rim members through which the spoke blank is to be passed. 37 is a punch reciprocably mounted upon the guide body 29 and engageable with the head 33 of a spoke blank to eject the spoke blank from the guide and into assembled relation with the hub and rim members. The fingers 30 are designed to provide for the passage of the head 33 of the spoke blank and also the punch 37, so that this punch may carry the spoke blank inwardly to force the head 33 against its seat in the rim member. The punch is pivotally connected to the rod 38, which latter is universally connected to the upwardly extending arm 39 of the bell crank 40. The universal connection comprises the nuts 41 and 42 having rounded faces engaging the rounded concentric and opposite faces of the upper end of the upwardly extending arm. These nuts being adjustable upon the rod 38, also take care of different sized wire wheels. The bell crank 40 is pivotally mounted at 43 upon the base 1 and its lower arm 44 has journalled thereon the roller 45.

It is to be noted that two spoke blanks are simultaneously moved into assembled relation with the hub and rim members and that these two spoke blanks when in assembled relation are crossed. To connect the spoke blanks to the hub and rim members, I have provided means for welding their inner ends to the hub member or hub shell 7 and this means comprises the pair of electrodes 46 which are mounted upon and insulated from the bell crank 47 and which are electrically connected to the transformer 48. When these electrodes come into contact with the inner ends of the spoke blanks the electric circuit is completed through the electrodes, the inner ends of the spoke blanks and the intermediate portion of the hub member or hub shell. The bell crank 47 is pivotally mounted at 49 upon the arm 50 depending from the top 2 of the base and this bell crank has pivotally connected to its lower arm the lever 51 which has journalled on its free end the roller 52. The free end of the bell crank extends beneath the lever 51 and has adjustably secured therein the stud 53 between which and the lever is located the compression coil spring 54. 55 is a shaft journalled on the top 2 of the base and having non-rotatably secured thereto the cams 56, which are located at its ends, and the cam 57, which is located at its middle. The cams 56 are engageable with the rollers 45 to actuate the bell cranks 40 and through them the punches 37 and the cam 57 is engageable with the roller 52 to yieldably actuate the bell crank 47 and yieldably force the electrodes 46 into engagement with the inner ends of the spoke blanks. By reason of this latter arrangement pressure is maintained upon the inner ends of the spoke blanks while they are being heated, upset and welded to the hub member or hub shell. The shaft 55 is driven by any suitable means, such as the gear 57′, secured to the shaft and the pinion 58 meshing with this gear and secured to the drive shaft 59, which latter is journalled in the base 1.

60 is one of a pair of hoppers for containing the spoke blanks, there being one hopper above each guide. The lower portion of each hopper is in the nature of a tube and the spoke blanks with their heads uppermost are allowed to feed downwardly by gravity. 61 is a trigger having the projection 62 adapted to extend through the opening 63 in the lower face of the hopper and engageable with the head of the lowermost spoke blank to retain the same. This trigger is pivotally mounted at 64 upon the bracket 65 secured to the hopper and has pivotally connected to its lower end the dog 66. The trigger and dog have the cooperating shoulders 67 and 68, respectively, which are formed by projections on these members and which are arranged to limit the swinging of the dog in a counter-clockwise direction relative to the trigger and to permit free normal swinging of the dog to the trigger in a clockwise direction. 69 is a trip in the nature of a finger mounted upon the punch 37 and engageable with the lower portion of the dog 66 upon the outward or return movement of the punch to swing the trigger 61 about its pivot 64 and release the lowermost spoke blank from the hopper. When the release member 69 passes the dog 66 the trigger will then return by gravity to engage and retain the next spoke blank. The dog 66 upon inward movement of the punch simply swings about its pivot in a clockwise direction, so that the position of the trigger 61 is unchanged.

From the above description, it will be seen that I have provided an improved construction of apparatus for assembling wheels in which the spoke blanks are automatically placed in assembled relation with the hub and rim members and secured in place. It will also be seen that I have provided means for feeding the spoke blanks as desired to the means for guiding the spoke blanks into their proper assembled relations and further that

I have provided means for maintaining the pressure of the electrodes upon the spoke blanks during the welding operations.

What I claim as my invention is:

1. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for assembling a spoke blank with said members, and means for connecting said spoke blanks to said members.

2. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for passing a spoke blank through one of said members into assembled relation with the other of said members, and means for connecting said spoke blank to said members.

3. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for passing a spoke blank having a head at one end through one of said members and holding the head against said member, and means for connecting the end of the spoke blank opposite the head to the other of said members.

4. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for passing a spoke blank having a head at one end through said members and holding the head against one of said members, and means for welding the end of the spoke blank opposite the head to the other of said members.

5. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for guiding a spoke blank, means for moving said blank along said guiding means into assembled relation with said members, and means for connecting said spoke blank to said members.

6. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for guiding a spoke blank, a member engageable with said spoke blank and adapted to move the same along said guiding means into assembled relation with said members, means comprising an electrode for connecting said spoke blank to said members, and cam means for actuating said spoke blank moving member and electrode.

7. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for guiding a spoke blank, a hopper for feeding the spoke blank to said guiding means, a member engageable with said spoke blank and adapted to move the same along said guiding means into assembled relation with said members, means on said spoke blank engaging member controlling the feeding of the spoke blank from said hopper, and means for connecting the spoke blank to said members.

8. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for assembling a spoke blank with said members, and means for connecting said spoke blank to said members, said means comprising an electrode, a cam and yieldable means for actuating said electrode from said cam.

9. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for guiding a spoke blank, a member for moving the spoke blank along said guiding means into assembled relation with said members, means comprising an electrode for connecting the spoke blank to said members, cams for actuating said spoke blank moving member and electrode, and a single shaft carrying said cams.

10. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for simultaneously assembling a pair of spoke blanks with said members, and means for connecting said spoke blanks to said members, said connecting means comprising a pair of electrodes engageable with corresponding portions of said spoke blanks.

11. In an apparatus for assembling wire wheels, the combination with means for holding the hub and rim members, of means comprising a plurality of pivotal spring urged members for guiding a spoke blank, means for moving the spoke blank between said guiding members into assembled relation with said hub and rim members, and means for connecting the spoke blank to said hub and rim members.

12. In an apparatus for assembling wire wheels, the combination with means for holding hub and rim members, of means for assembling a spoke blank with said members and means comprising a movable electrode for connecting said spoke blank to said members and means for yieldably moving said electrode.

In testimony whereof I affix my signature.

JOHN SNEED.