The invention relates to the construction of nipples for retaining the wire spokes of pneumatic wheels for motor cars in place, in the rim or hub of the wheel, and the particular objects of the invention are to provide a continuous process and mechanism for swaging the same, from a coil of metal wire with dies.

By means of this process a continuous succession of nipple blanks are formed by pressure from a cylindrical wire or rod fed to forming dies by means of which their external surfaces are completely shaped, ready for boring or screw threading.

In this device powerful toggle mechanism is employed to compress the sides of the blank and a simple unitary structure is provided in which the mechanism is self contained and is operated from a common actuating shaft from which all the various movements are obtained.

The mechanism by means of which the several steps of the process are carried out is exemplified in the accompanying drawings hereinafter more fully described and the novelty therein particularly pointed out in the claims.

In the accompanying drawings Fig. 1 is a side elevation of the improved forming head.

Fig. 2 is a front elevation thereof,
Fig. 3 is a plan thereof,
Fig. 4 is an enlarged plan thereof,
Fig. 5 is an enlarged front elevation thereof.

Figs. 6 and 7 are full sized front and side elevations respectively of the finished blank.

In these views A is the standard of the forming head, B is the operating shaft, C is an operating cam thereon, D, D, are triangular swinging plates pivoted at E upon the standard, and these plates support all the moving parts of the head.

These parts comprise rock arms F and G, which are pivoted intermittently of their ends at H and I, respectively, in the plates D, D, and upon their upper ends in guides J', K', are adjustably secured to the forming or swaging dies J and K.

The lower extremities of these rock arms are engaged alternately by the cam C, to open and close the dies.

The cam sleeve also engages with the central pivot M of a toggle joint composed of links N, O, the outer ends of which are pivoted in the rock arms at P, Q, respectively.

Set screws R, R', adjust the movement of these arms, and set screws S, S', adjust the movements of the dies and clamping screws T and V, secure the dies in adjusted positions.

W is a stationary shearing block mounted in the standard A against which the forming dies move transversely to sever the blank from the wire stock.

This block is provided with an opening W' through which the wire is passed.

The device operates in the following manner.

The wire is severed when the forming dies pass the opening in the stationary block at W'. Also the compression begins at once, and is completed as the dies pass to the central position at X and finally when the dies have passed to the third position as Y, the heading die Z forms the head, as shown in Figs. 6 and 7.

The oscillating head is operated to convey the dies in succession to the several positions, by means of the action of the cam C, and the dies are opened and closed, by the movements of cam C and the sleeve L, thereon, acting upon the toggle links N, O, which are operatively connected with the cam sleeve at M.

When the cam is in a horizontal position at the right of the shaft (Fig. 5) at 1, the dies will be in position to receive the wire stock from which the nipple is formed, as the cam moves toward the left and arrives at the central upper vertical position at (2), the lower ends of the rock arms will be spread apart, thus causing the forming dies J and K, to approach each other.

When contact is made between the cam strap and adjusting screw R', the dies start to move from the position (1), towards position (2), at which time the square is par-
tially formed upon the blank and the shearing commences.

When the cam reaches the vertical position (2), the forming operation is completed with the links N, O, in horizontal or locked position.

When the cam arrives at position (3) the dies have reached the third or heading position with the toggle links still in the locked position.

Owing to the clearance of the cam and its strap at the point 3 of the cam, and clearance at the opposite point 1 when the cam is the vertical position 4 underneath the shaft B the dies remains at rest until contacts at these points are made. During this rest interval of the die the head is formed by means of the heading die which may be operated in any convenient manner.

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

1. In a forming head of the character described, a standard, a shearing plate therein, said plate having a feed opening therethrough, a pair of dies reciprocable in said standard across said opening, a pair of arms to which said dies are respectively secured, an oscillating member pivoted in said standard in which said arms are pivoted, toggle links connecting said arms and cam means for alternately operating said arms to oscillate said oscillating member, said cam means serving also to operate said toggle links to close said dies.

2. In a forming head of the character described, a standard, a shearing plate therein, said plate having a feed opening therethrough, a pair of dies reciprocable in said standard across said opening, a pair of arms to which said dies are respectively secured, an oscillating member pivoted in said standard in which said arms are pivoted, toggle links connecting said arms and cam means for alternately operating said arms to oscillate said oscillating member, said cam means serving also to operate said toggle links to close said dies, and adjusting means for said dies, and adjustable means for determining the amount of clearances between said cam means and said arms.

3. In a forming head of the character described, a stationary shearing plate, and a pair of forming dies reciprocable thereover, an oscillating member, a pair of arms pivoted thereon, said dies being secured to said arms and moving therewith, means for alternately moving said arms to swing said oscillating member to move said dies in opposite directions and means for opening and closing said arms and dies.

4. In a forming head of the character described having spaced shearing and heading positions, a standard, a shearing plate therein at the shearing position having a feed opening, a pair of forming dies, guides in said head for said dies, a heading die spaced from said feed opening, arms to which said dies are attached, a swinging member to which said arms are pivoted, 70 toggle links connecting said arms, cam means for alternately moving said arms to move said forming dies from the shearing position to the heading position and to reverse the movement, said cam means also acting to operate the toggle links to close said dies at a central position between said shearing and heading positions.

In testimony whereof I affix my signature.

EDWARD W. STOLER.