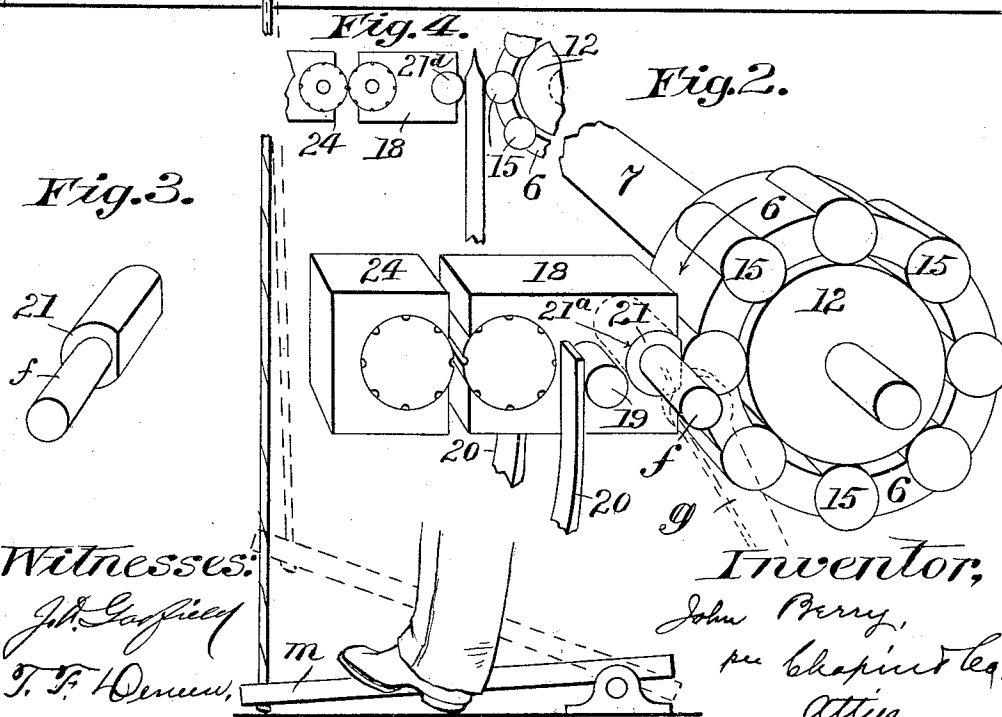
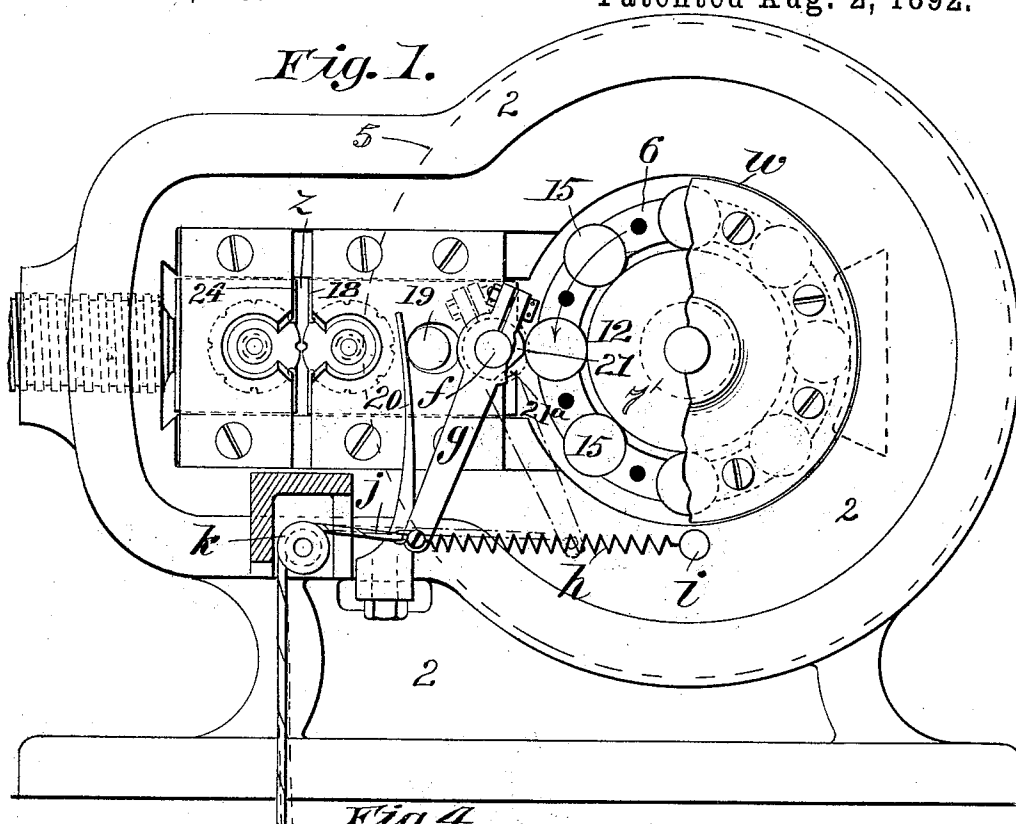


(No Model.)

J. BERRY.
SWAGING MACHINE.

No. 480,228.

Patented Aug. 2, 1892.



UNITED STATES PATENT OFFICE.

JOHN BERRY, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO THE
NATIONAL NEEDLE COMPANY, OF SAME PLACE.

SWAGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,228, dated August 2, 1892.

Application filed November 7, 1891. Serial No. 411,158. (No model.)

To all whom it may concern:

Be it known that I, JOHN BERRY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Swaging-Machines, of which the following is a specification.

This invention relates to improvements in swaging-machines more especially designed for the reduction of rods forming blanks for the manufacture of articles such as needles or bicycle-wheel spokes, and more particularly pertains to improvements in the swaging-machine for which Letters Patent of the United States were granted to me August 26, 1890, numbered 433,351. In the said patented machine there are embodied a fixed die and another die to coact therewith which is carried upon a holder or die-block that is mounted in suitable slide-bearings, said die-block having a stud or roll to receive the impact of a series of hammer rolls or tappets which are carried upon a rotatable wheel mounted in fixed bearings, and all whereby when the hammer-rolls are revolved they successively forwardly force the block and movable die against the fixed die, a retracting-spring retiring the movable die and carrying-block from the other die after the forcing movement upon its impact stud of one of the hammer-rolls, thereby bringing the said impact stud subject to the forcing action of the succeeding hammer-roll. In the operation of the said machine it is usually the practice to impart a constant rotation to the hammer-rolls and, consequently, constant vibratory movements to the working die, and said movements of the working die, being continued at the periods intermediate of the removal of the swaged rods and the presentation of the next blanks, are found to affect the machine in a disadvantageous manner, in that there is much useless wear of the most important operative parts; and the particular purpose of the present invention is to so improve the construction of machines of the class to which this invention relates that under a continued rotation of the shaft carrying the hammer-rolls there may be at will a cessation of the vibratory movements of the one die and again, as required, a resumption of said vibratory or working movements.

The invention therefore essentially con-

sists, in a swaging-machine, in the combination, with a series of revoluble hammer rolls or tappets, of a pair of swaging-dies, one of which is carried by or forms a part of a movable die-block, and which block has therefor an abutment piece or member which is suitably movable at pleasure for receiving the impact from the hammer-rolls to thereby impart the vibratory movement to the working die or for being placed out of the orbit of the hammer-rolls, thereby rendering the working die passive.

In the accompanying drawings, Figure 1 is a front elevation of a swaging-machine embodying substantially the construction set forth in the aforesaid Letters Patent and having, further, the present improved devices applied thereon. Fig. 2 is a perspective representation of the fixed die, the working die, the hammer-rolls and their carrier-wheel with the anvil-block, and the movable abutment-piece which is applied on the movable die and adapted to be subject to the forcing action of the hammer-rolls, together with the retiring-spring for the working die. Fig. 3 is a detail perspective view of a preferred specific form for the abutment-piece of the working die. Fig. 4 is a view illustrating a somewhat-different form of movable device for receiving the impact from the hammer-rolls and imparting the movement to the working die.

In the drawings, 2 represents the main frame. The said frame has formed therein and extending transversely thereof a circular chamber or opening *w*, and at one side thereof and extended horizontally along the frame a slot *z*, which has parallel sides and constitutes a support for the fixed die-block 24 and a support and guideway for the movable block 18. A cylindrical roller-wheel 6 is fitted within the circular chamber *w* of the frame 2, and is provided with an arbor 7 and rotating pulley 5. The roller-wheel is formed with a series of roller-chambers or sockets for receiving the hammer-rolls 15 15, which are fitted to turn more or less loosely in the said sockets and to be carried around by the roller-wheel, the axes of the hammer-rolls being parallel with each other and with the axis of the carrying-wheel therefor. The hammer-rolls have their peripheries projected beyond the peripheral face of the roller-wheel, and 12 is an anvil-disk for reinforcing the rolls, a

rotational movement being preferably imparted thereto independent of the rotation of the roll-wheel in a manner fully set forth in the aforesaid Letters Patent. The rotation of the roller-wheel 6 insures the bringing around of the hammer-rolls 15 in rapid succession, each of the latter being made to strike a blow against the stud 21, which is in the end of the die-block 18, the effect of each of said blows being to drive the block 18 and the die formed or mounted thereupon sharply toward the fixed die formed or mounted upon the block 24. The spring 20, acting on the stud 19 of the block 18, returns the block after the forcing action thereupon by one hammer-roll again to the forcing action of the succeeding hammer-roll. The stud 19 by its contact with the end of the slot *e* limits the movement of the movable block 18 away from the fixed block and toward the roller-wheel.

The machine as above briefly described is substantially the same as is at this time well known in view of my aforesaid patent, and I will now proceed to particularly describe the features which constitute the present improvements.

It will be noticed that the stud 21, as in the already-patented machine, is set into a circular socket, (indicated in the accompanying drawings by 21^a in Fig. 2,) so that its periphery may stand at the rear of the die-block 18 to receive the impact of the hammer-roll; but it will be further noticed that this roll 21 is faced off or flattened at one side, whereby the abutment-piece constituted by said stud 21 is movable at pleasure for being placed out of the path of the hammer-rolls, and thereby the continued revolutions of the latter will be without effect upon the movable die. The said stud is provided with an axially-extended portion *f*, which projects forwardly from the forward face of the die-block 18, and has connected thereto as a rigid angular extension the lever *g*. One end of the spiral spring *h* is connected to the end of the lever, the other being secured to the fixed stud *i* on the machine-frame. A cord, chain, or like flexible connection is by one end connected to the extremity of the said lever and is thence extended in an opposite direction from the line of reaction of the spring *h*, passing over the fixed sheave *k* and downwardly extended to a connection with one end of a treadle-lever *m*, pivotally mounted on the floor. The spring *h* operates to swing the lever so that the obliterated side of the impact-receiving stud may be presented toward the hammer-rolls, and therefore normally the movable die will remain passive; but on desiring to swage a needle or other blank which is presented between the dies the treadle-lever *m* is depressed, securing the swinging of the lever *g* against the stress of the spring *h*, and at this time the full or prominent portion of the stud 21 will be presented for the hammer-roll impact. Of course on release of the pressure upon the

treadle-lever the stud is automatically partially rotated to place the flattened side toward the path of the hammer-rolls, and thus it will be seen in what manner under a continuous speeding of the hammer-rolls intermittent operations of the movable swaging-die may be insured.

The treadle-operated devices applied relative to the movable abutment or impact-receiving element, substantially as shown and described, constitute but one of several means for effecting the actions described, and of course it is to be understood that the invention is in nowise limited to the employment of the treadle devices and connections.

In Fig. 4 a modification of the movable device for receiving the impact from the hammer-rolls and imparting the movement to the working die is shown, the movable die having its stud 21^d formed with its face full and adapted at the rearmost limit of movement of the die to be slightly separated from the path of the hammer-rolls. *t* represents a wedge-formed piece provided for movement at the rear end of the die-block and to be by any adequate means placed between the hammer-rolls and the die-block stud and to constitute only when so interposed the medium for the transmission of movement from the hammer-rolls to the working die.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a swaging-machine, the combination, with a series of revoluble hammer-rolls, of a pair of swaging-dies, one of which is movable toward and from the other and has provided therefor an abutment piece or member that is suitably movable at pleasure for receiving the impact from the hammer-rolls and transmitting movement to the working die or for being placed out of the path of the hammer-rolls, thereby rendering the working die immovable, substantially as described.

2. In a swaging-machine, the combination, with a series of revoluble hammer-rolls, of a pair of swaging-dies, one of which is movable toward and from the other and has a stud with its one side face reduced mounted thereon for a rotational movement, and devices connected with said stud for securing a rotational movement thereof, for the purpose set forth.

3. In a swaging-machine, the combination, with a series of revoluble hammer-rolls, of a pair of swaging-dies, one of which is movable toward and from the other and is provided with a flat-faced stud mounted thereon for a rotational movement, a lever rigidly fixed to said stud, the cord, sheave, and treadle-lever, and the spring *h*, applied for a retractile action on said stud-lever, all substantially as described, for the purposes set forth.

JOHN BERRY.

Witnesses:

WM. S. BELLOWS,
T. F. DENEEN.