(No Model.) 2 Sheets—Sheet 1.

A. J. MORSE.

SWAGING MACHINE.

No. 588,649. Patented Aug. 24, 1897.

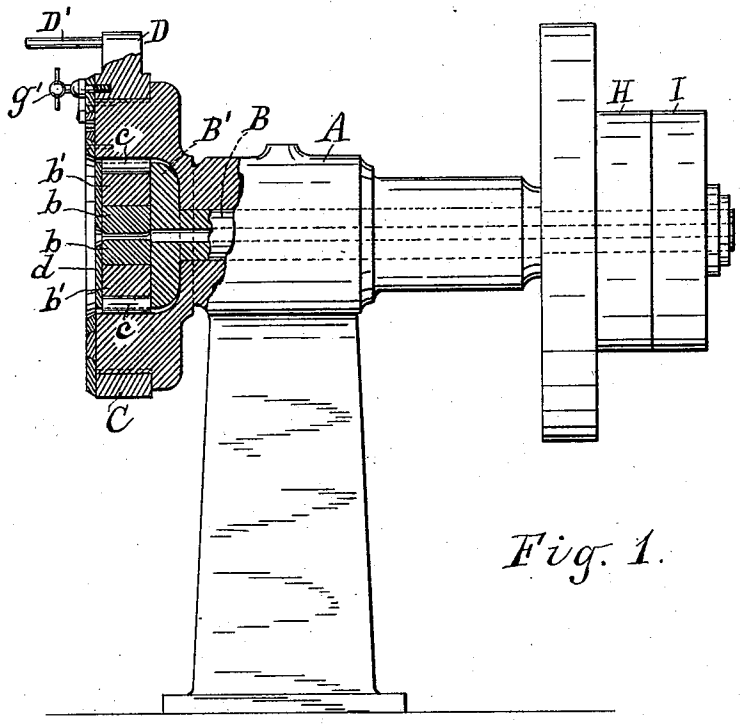


Fig. 1.

Fig. 2.

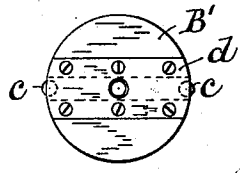
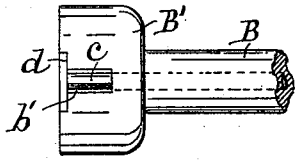


Fig. 3.



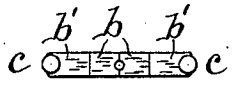


Fig. 4.

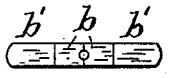


Fig. 5.

Witnesses.
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H. M. Seamans

Inventor.
Arthur J. Morse
By C. H. Duell
his Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

A. J. MORSE.

SWAGING MACHINE.

No. 588,649. Patented Aug. 24, 1897.

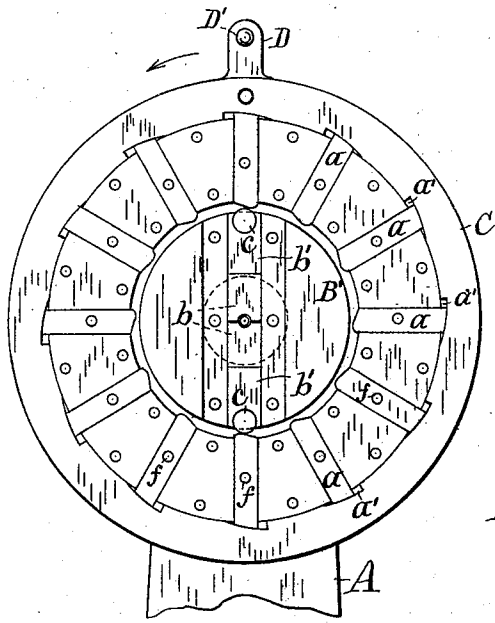


Fig. 6.

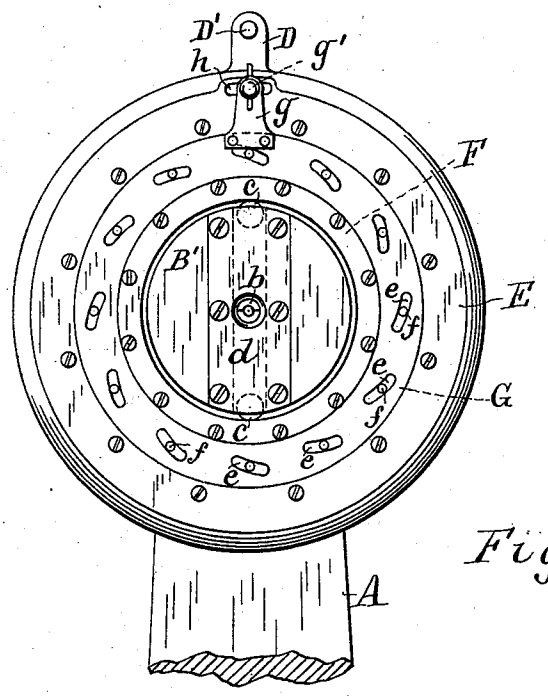


Fig. 7.

Witnesses.
Mark W. Dewey
H. M. Seamans

Inventor.
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his Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ARTHUR J. MORSE, OF SALISBURY, CONNECTICUT, ASSIGNOR TO THE MORSE-KEEFER CYCLE SUPPLY COMPANY, OF SAME PLACE.

SWAGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 588,649, dated August 24, 1897.

Application filed March 12, 1897. Serial No. 627,194. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR J. MORSE, of Salisbury, in the county of Litchfield, in the State of Connecticut, have invented new and useful Improvements in Swaging-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in swaging-machines for swaging bicycle-spokes, needles, and analogous articles; and the object is to provide means whereby the cams or tappets may be quickly, equally, and simultaneously adjusted, and the friction decreased between said cams or tappets and the die-blocks or backers.

To this end my invention consists in the combination, with the stationary cylindrical shell, of a circular series of cams movable radially in grooves in said shell, an adjustable ring mounted on the shell and provided with a series of inclined recesses to engage the cams, a cylindrical shaft in said shell carrying a rotary head containing a groove, a pair of dies, and a pair of die-blocks in said groove and a roller in each die-block to engage the cams; and my invention consists also in certain other combinations of parts hereinafter described, and specifically set forth in the claims.

In the drawings hereto annexed and forming a part of this specification, Figure 1 is a side elevation, partly in section, of my improved swaging-machine. Fig. 2 is a face view of the rotary head. Fig. 3 is a side elevation of the rotary head removed from the shell. Fig. 4 shows a face view of the dies, die-blocks, and rollers removed from the head. Fig. 5 shows dies and die-blocks without rollers. Fig. 6 is an enlarged face view of the head of the swaging-machine with the face-plates removed, and Fig. 7 shows the same with the face-plates and the adjustable plate secured thereto.

Referring specifically to the drawings, A is the stationary cylindrical shell or casting, one end of which is expanded to contain the rotatable head.

B′ is the rotatable head, and B is the cylindrical driving-shaft of the head, which extends horizontally and longitudinally within the shell. Across the end of the said head is a mortise or groove, and in the groove is a pair of sliding dies *b b*, a pair of die-blocks or backers *b′ b′*, and a roller *c* in each die-block to engage the beveled ends of the cams *a a*, &c.

In order to secure the dies, die-blocks, and rollers in the groove of the head B′, I secure a small plate *d* to the face of the head over the groove. This plate *d* is shown let into the head so that its face is flush with that of the head.

In the face of the expanded end of the shell are a series of radial grooves, and in these grooves are the movable tappets or cams *a a*, &c. The inner ends of the cams are beveled or inclined and engage the small rollers *c c* in the ends of the die-blocks. The outer ends of the cams are also beveled and engage the series of inclined surfaces or recesses *a′ a′*, &c., formed on the inner surface of the adjustable ring C, mounted on the periphery of the expanded portion of the shell. Said recesses in the ring are all inclined in the same direction corresponding with the beveled ends of the cams, so that when it becomes necessary to move the cams toward the rotary head more or less this may be accomplished by moving or rotating the ring C upon the shell. To effect this movement easily, I preferably provide the ring with a lug D, to which is attached a handle D′. The unfeathered arrow near the lug indicates the direction of movement of the ring when the cams are forced toward the center. It will be obvious that by these means the cams will be moved simultaneously and equally.

In order to secure the cams *a a*, &c., in the grooves, I secure, by means of screws or bolts, a pair of ring-shaped face-plates E F to the face of the stationary head. The face-plates differ in size and are concentric with each other. Between the said face-plates is an adjustable ring-shaped face-plate G, provided with a series of slots *e* equal in number to the cams. These slots engage the cams *a* by means of pins *f*, projecting from the cams and entering the slots. The slots are slightly curved and tangential, so that when the plate is rotated with the ring C, to which it is connected by a lug *g* and screw *g′*, passing

through a slot *h* in the face-plate E, it will also aid in moving the cams *a a*, &c. The movable face-plate serves to move the cams outward away from the center when the ring C is moved in the direction to permit of such movement. Plate G is provided with beveled edges which engage beveled edges on the stationary plates.

During the revolution of the head there are as many closures of the dies each revolution of the shaft as there are tappets or cams in the circular series. The cams are diametrically opposite each other, and this insures a stroke upon both die-blocks or backers simultaneously.

I preferably provide the die-blocks with the rollers *c c*, as they decrease the friction to a considerable degree, but I do not desire to be limited to them, as the die-blocks themselves may be provided with curved ends, as shown in Fig. 5, and directly engage the cams.

In Fig. 1, H is the driving-pulley, and I is the loose pulley on the shaft B.

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

1. In a swaging-machine, the combination with the stationary cylindrical shell, of a circular series of cams movable radially in grooves in said shell, an adjustable ring mounted on the shell and provided with a series of inclined faces to engage the cams, a stationary face-plate to retain the cams in their grooves, an adjustable face-plate provided with tangential slots, pins projecting from the cams and entering the slots, a rotary shaft carrying a head with a groove and dies and die-blocks in the groove, as set forth.

2. In a swaging-machine, the combination with the stationary cylindrical shell, of a circular series of cams movable radially in grooves in said shell, an adjustable ring mounted on the shell and provided with a series of inclined faces to engage the cams, a stationary face-plate to retain the cams in their grooves, an adjustable face-plate provided with tangential slots, pins projecting from the cams and entering the slots, a connection between the adjustable face-plate and the adjustable ring, means carried by the said ring for moving the same, a rotary shaft carrying a head with a groove and dies and die-blocks in the groove adapted to be operated by the cams, as set forth.

3. In a swaging-machine, the combination with the stationary cylindrical shell, of a circular series of cams movable radially in grooves in said shell, an adjustable ring mounted on the shell and provided with a series of inclined faces to engage the cams, a pair of stationary concentric face-plates to retain the cams, a circular adjustable face-plate between the stationary plates, said adjustable plate having tangential bearing-surfaces, pins projecting from the cams and engaging the said bearing-surfaces, a connection between the adjustable plate and the adjustable ring, means on the ring for turning the same, a rotary cylindrical shaft carrying a head provided with a groove, dies and die-blocks in the groove, rollers in the end of the die-blocks to engage the cams, and a plate covering the groove and secured to the head, as and for the purpose described.

In testimony whereof I have hereunto signed my name.

ARTHUR J. MORSE. [L. S.]

Witnesses:

CHARLES F. WANGER,

THOS. L. NORTON.