

H. HENRICH.
SWAGING MACHINE.
APPLICATION FILED APR. 5, 1907.

953,616.

Patented Mar. 29, 1910.

Fig. 1,

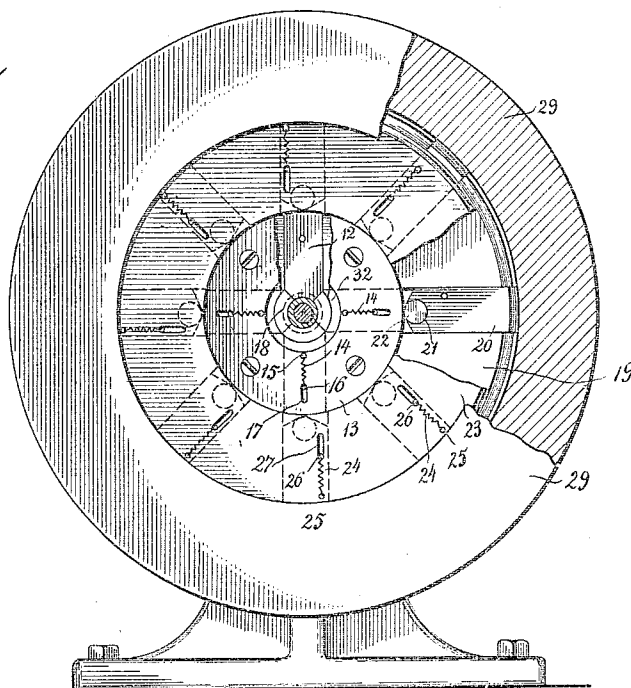


Fig. 3,

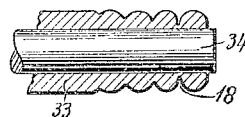
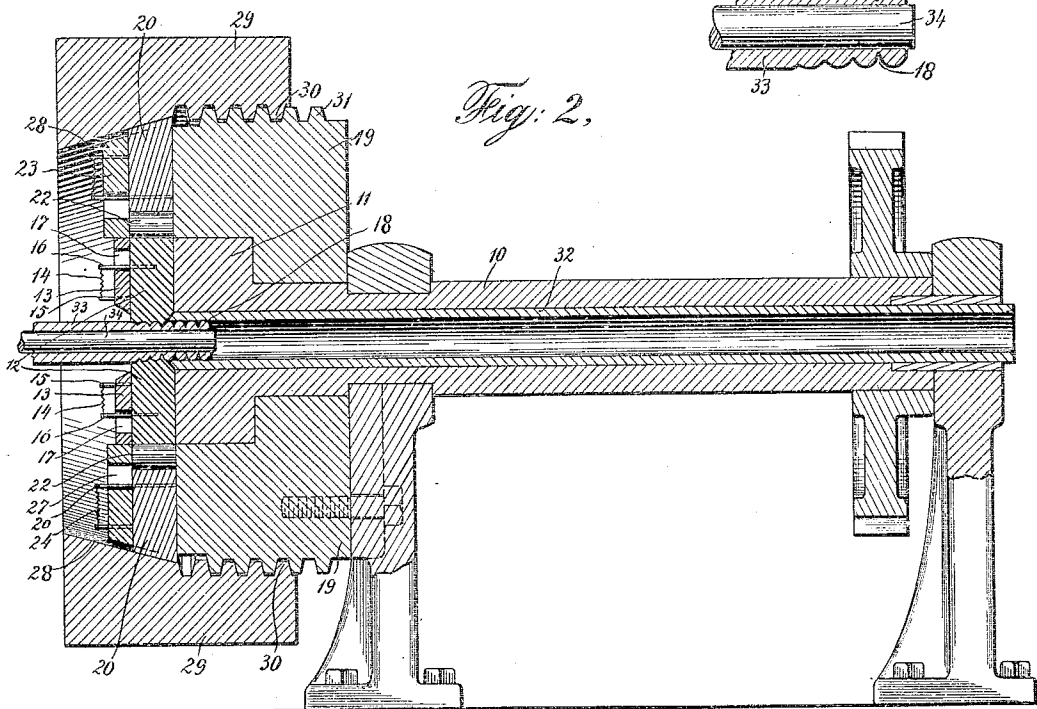


Fig. 2,



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY HENRICH, OF NEW YORK, N. Y.

SWAGING-MACHINE.

953,616.

Specification of Letters Patent.

Patented Mar. 29, 1910.

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To all whom it may concern:

Be it known that I, HENRY HENRICH, of New York city, in the county of New York and in the State of New York, have invented a certain new and useful Improvement in Swaging-Machines, and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my invention; Fig. 2 is a vertical, central, longitudinal section of Fig. 1; and Fig. 3 is a transverse sectional view of Fig. 1, in the plane of the swaging tools.

The object of my invention has been to provide a swaging machine which, while specially adapted for swaging finger-rings, shall be capable of other uses, and in which the work can be readily inserted; and to such ends my invention consists in the swaging machine hereinafter specified.

In carrying my invention into practice, I provide a hollow spindle 10 mounted in suitable bearings, and suitably driven. On the forward end of said spindle is a head 11 in which are swaging tools 12, mounted in radially formed slots. A plate 13 which is secured to the head 11 in any approved manner as by screws covers the slots, and secures the tools in place. The tools are normally held close together by springs 14 which are secured to pins 15 on the plate 13, and which engage pins 16 on the swaging tools, said pins extending through slots 17 in the plate 13. The swaging tools 12 are shaped according to the work to be done. For forming finger-rings, they are provided with a series of grooves 18 which, from the front toward the rear, gradually change from the form of the tube to the final form of the finished article, until the rearmost groove is of the shape which it is desired the finished ring-blank to have. The head 11 is surrounded by an annular frame 19 that is fixedly secured to the frame of the machine. The annular frame is provided with radial slots preferably of a number equal to a multiple of the number of swaging tools, and in each slot is mounted a slide 20, which will be termed a hammer. Each slide has a cylindrical seat 21 formed in its hammer-end, and a roll 22 is mounted in said seat. A plate 23 which is secured to the annular frame 19 in any approved manner, as by screws, for example, covers the open ends of the slots and holds the hammers in place in their

respective slots. Each hammer is drawn outward by a spring 24 that is secured to a pin 25 in the plate 23, the spring engaging the pin 26 secured in the hammer, the latter pin projecting through a slot 27 in the plate. The outer surface of the annular frame is conical, and the outer ends of the hammers are correspondingly formed, so that when the inner conical surface 28 of a ring 29 is forced rearward, it causes said hammers to move toward the center into position to be struck by the swaging tools as each tool passes a hammer. As a convenient means of forcing the ring 29 rearward, a screw-thread 30 on the said ring engages a screw-thread 31 on the annular frame, so that upon rotating the ring 29, the said action will be effected.

In order to open the swaging tools, so that a piece of work may be inserted, the following arrangement is provided: A sleeve 32 is mounted in the spindle 10 so as to be longitudinally movable, and the forward end of the said sleeve is beveled or provided with a conical surface. The inner rear corners of the swaging tools are beveled to provide shoulders to cooperate with said conical surface, and thus, when the sleeve 32 is forced forward, its conical surface engages the beveled corners of the swaging tools and spreads them apart.

In the operation of my machine, for the making of finger-rings, a tube 33 of the metal from which the rings are to be made is passed over a mandrel 34; the sleeve 32 is forced forward to separate the swaging tools, and the tube 33 and mandrel 34 are inserted between the swaging tools. In order to permit the swaging tools to spread apart, it is, of course, necessary that the ring 29 be unscrewed so that its conical surface shall partly or wholly withdraw from over the hammers, to permit the hammers to spread apart, if the swaging tools happen to be in line with them. The tube 33 is only inserted far enough so that it can be engaged by the first groove in the swaging tools. The ring 29 is then screwed up until the hammer causes the swaging tools to form an impression of the desired depth where the first finger-ring blank is to be. The rotation of the swaging tools with the rapid blows which they apply to the metal being shaped, owing to the action of the hammers, causes a very even and rapid action of the tools on the metal being shaped.

When the first groove of the swaging tools has completed its work, the tube 33 being maintained in position therein by the springs 14, the tools are separated again by advancing the sleeve 32, and retracting the ring 29, and the tube 33 is inserted until it is engaged both by the first and second grooves in the swaging tools. This operation is repeated until the first finger-ring blank on the tube 33 has passed successively through all the finger-ring forming grooves, when the blank will have been completed. The completed blank can either be severed from the tube 33, or can be passed on into the hollow spindle 10 until the entire tube 33 has been formed into blanks.

While I have described what I consider to be the best embodiment of my invention, I desire it to be understood that the principles can be embodied in different forms, and I desire not to be limited beyond the requirements of the prior art, and the terms of my claims.

Having thus described my invention, I claim—

1. In a swaging machine, the combination of a rotatable head having swaging tools mounted therein, means for causing the tools normally to contact with the work, means for causing said tools to strike upon the work, and means whereby said tools may be spread apart, for introducing or removing the work.

2. In a swaging machine, the combination of a rotatable head provided with a series of radial slots, swaging tools mounted in said slots, springs normally tending to force said tools toward the center, means for striking said tools, and means for spreading said tools apart.

3. In a swaging machine, the combination of a rotatable head having radial slots, swaging tools mounted in said slots, a hollow spindle upon which said head is mounted, and a sleeve mounted in said spindle and provided with a conical end that is adapted to engage and separate said tools.

4. In a swaging machine, the combination of a rotatable hollow spindle, a head mounted thereon, swaging tools mounted in radial slots in said head, springs tending to force said tools toward the center, a sleeve mounted in said spindle and provided with a beveled end that is adapted to engage beveled shoulders on said tools to spread them apart, an annular frame surrounding said head and provided with radial

slots, hammers mounted in said slots, the outer ends of said hammers being beveled, and a ring having an inner conical surface adapted to engage said hammers and force said hammers toward the center.

5. In a swaging machine, the combination of a rotatable hollow spindle, a head mounted thereon, swaging tools mounted in radial slots in said head, springs tending to force said tools toward the center, a sleeve mounted in said spindle and provided with a beveled end that is adapted to engage beveled shoulders on said tools to spread them apart, an annular frame surrounding said head and provided with radial slots, hammers mounted in said slots, the outer ends of said hammers being beveled, and a ring having an inner conical surface adapted to engage said hammers and force said hammers toward the center, said sleeve and annular frame being provided with screw-threads whereby said conical surface can be forced against said hammers.

6. In a swaging machine, the combination of a rotatable hollow spindle, a head mounted thereon, swaging tools mounted in radial slots in said head, springs tending to force said tools toward the center, a sleeve mounted in said spindle and provided with a beveled end that is adapted to engage beveled shoulders on said tools to spread them apart, an annular frame surrounding said head and provided with radial slots, hammers mounted in said slots, the outer ends of said hammers being beveled, springs tending to force said hammers outward, and a ring having an inner conical surface adapted to engage said hammers and force said hammers toward the center.

7. In a swaging machine, the combination of a head having a series of swaging tools radially movable thereon, said tools together forming annular grooves in a progressive series from a shape only slightly different from cylindrical to the final shape of the outer surface of a finger ring, and all of the swaging tools located upon the head being adapted to be projected against the work simultaneously.

In testimony that I claim the foregoing I have hereunto set my hand.

HENRY HENRICH.

Witnesses:

EDWIN J. PRINDLE,
LILLIE CASS.