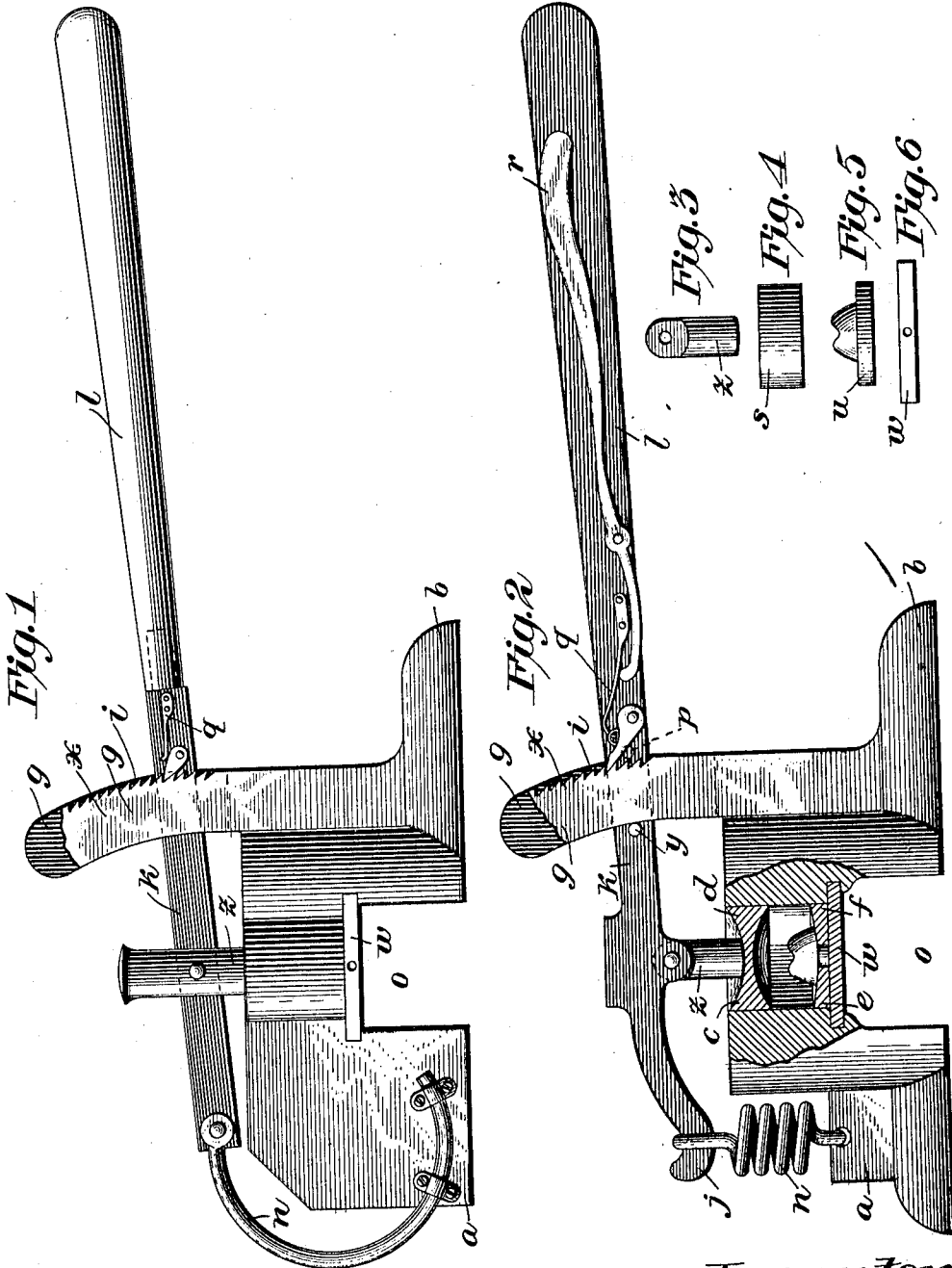


H. SCHWEITZER.
SWAGE MACHINE.
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1,019,994.



Witnesses:
Lawrence A. Russell
Hugh F. Burns.

Inventor:
Heinrich Schweitzer

UNITED STATES PATENT OFFICE.

HEINRICH SCHWEITZER, OF NEW YORK, N. Y.

SWAGE-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HEINRICH SCHWEITZER, a subject of the German Emperor, residing in New York, in the county of New York and State of New York, have invented a Swage-Machine Useful for Swaging Sheet Metal—for example, Metal Base-Plates for Artificial Teeth—of which the following is a specification.

In the so called shot swagers—tools, by the aid of which, sheet metal is swaged to a die by means of shot, powder, flour, plastic clay (moldine) or rubber—we used to apply the force that is to act upon the plunger by the blow of a mallet or by a screw device.

The combined use of a long lever and of a strong spring as sources of force to act upon the plunger in a swage machine and the novel construction and arrangement of the parts hereafter described are the principal object and nature of this invention.

In the drawing: Figure 1 is a side elevation of my swaging mechanism. Fig. 2 is a side elevation thereof shown partly in section. Fig. 3, 4, 5, and 6 are segmental views showing respectively the rammer, plunger, flask and supporting bolt which latter closes the flask cylinder when adjusted to the machine.

The base *a* is made of metal and possesses on one end means for the attachment of a spring, *n*, and of a lever. Centrally, in the base part is a cylindrical bore opening, *cd—ef*, which can be closed in its lower part by a bolt, *w*. Below this bolt the cylindrical cavity opens into a free space, *o*, easily accessible to the hand of the operator. Two heavy guide plates, *g*, archwise arising on the other end of the base include the parallel surfaces of the slot opening, *i*, in which the lever moves up and down. The larger arched periphery of the guide plates is provided with teeth serving as a rack for the engagement of a pawl, *x*. A footlike extension, *b*, indicates the forepart of the base.

The lever consists of a long arm, *l*, and a relatively much shorter one, *k*, and is pivotally connected with the rammer, *z*, at the common supporting point of the long and short lever arm. This rammer is intended to rest in a central depression on the top surface of the plunger, *s*. The construction of these parts purports to allow the transfer of the pressure generated by the leverage or otherwise upon the plunger. The ram-

mer is provided with sufficient strength to receive the blow of a mallet. The long lever arm, *l*, fits with parallel plane surfaces into the recess, *i*, of the base part. Guide bolts (*y*, *p*) may be used to prevent forward or backward movement of the lever. One or two pawls attached to the surfaces of the lever are intended to arrest the lever in any desired position by the engagement of the nose, *x*, in the rack of the guideplates of the base part. Such lock may be easily released by a small lever, *r*, that raises the spring, *g*, and with it the pawl, *x*. The distal end of the short lever may be fixed or loosely attached to the spring as shown respectively in Figs. 1 and 2.

The spring, *n*, attached in any desirable way and form to the end of the base part of the machine and to the end of the short lever arm forms the fulcrum for the lever; it is placed under stress as the end, *j*, of the lever arm, *k*, is raised. It is calculated to exert a contractive force of 100–2000 pounds according to the amount of stress under which it is placed. The plunger, *s*, has cylindrical side walls closely fitting to the cylinder and moving up and down in the cylindrical bore opening, *cd—ef*. Its top and bottom surfaces are concave or funnel shaped. The die flask, *u*, possesses the same cylindrical circumference as the bore opening and is intended to keep the die in place during the swaging process in the usual way. It is placed on top of the bolt, *w*. The bolt, *w*, closes the cylindrical bore opening forming a bottom for it when adjusted. It rests on both sides upon steps in the body of the base part and is easily adjusted before swaging and easily removed after swaging.

The swage machine is used in the following way: After adjustment of the bolt, *w*, the die with sheet metal to be swaged is placed in the cylinder, plastic material, moldine, powder or shot is introduced and the plunger inserted. The supporting rammer, *z*, meeting the top concavity of the plunger transmits the pressure upon the parts as soon as the force is applied. A continuous force is applied upon the plunger when the lever arm, *l*, is depressed and locked by the pawl engaging the rack, because the spring, *n*, at first acting as a yielding fulcrum is then placed under stress. The force generated by lever action is then maintained by the spring in its effort to con-

tract in accordance with the amount of stress under which the spring is placed. Having released the pressure after swaging it is easy to remove the bolt, *w*, and to
5 force the whole contents of the cylinder down into the open space, *o*.

Having now fully described my invention I claim:

10 In combination a swage machine having a lever with pawl spring on its surface, said lever provided with a pivotally attached supporting process to act upon a plunger, a
15 base part containing a cylindrical bore opening and means to adjust a bolt in the lower end of the bore opening and arch-wise arranged guide plates for guiding the

lever, said guide plates provided with dented notches upon the larger arched periphery for locking the lever by the pawl of the lever, a cylindrical plunger moving in said bore opening, a strong spring to act on one end of the lever and thereby exert force upon the plunger, and means to attach said spring to the base part at one end and to the lever at the other end substantially as described and shown and for the purpose set forth.

HEINRICH SCHWEITZER.

Witnesses:

JOHN P. DAVIS,

PHILIP D. ROLLHAUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."