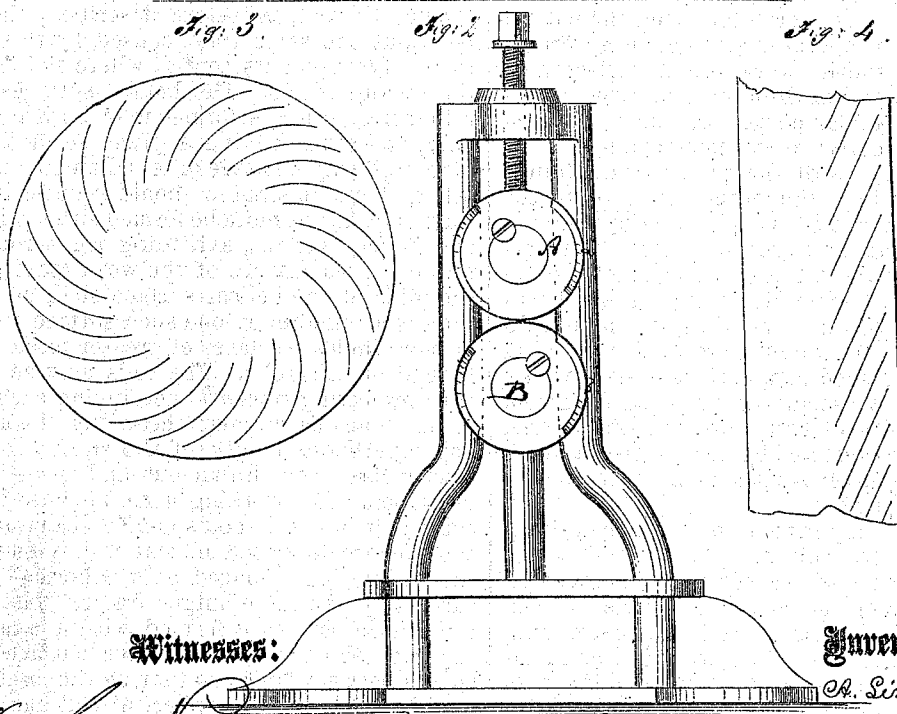
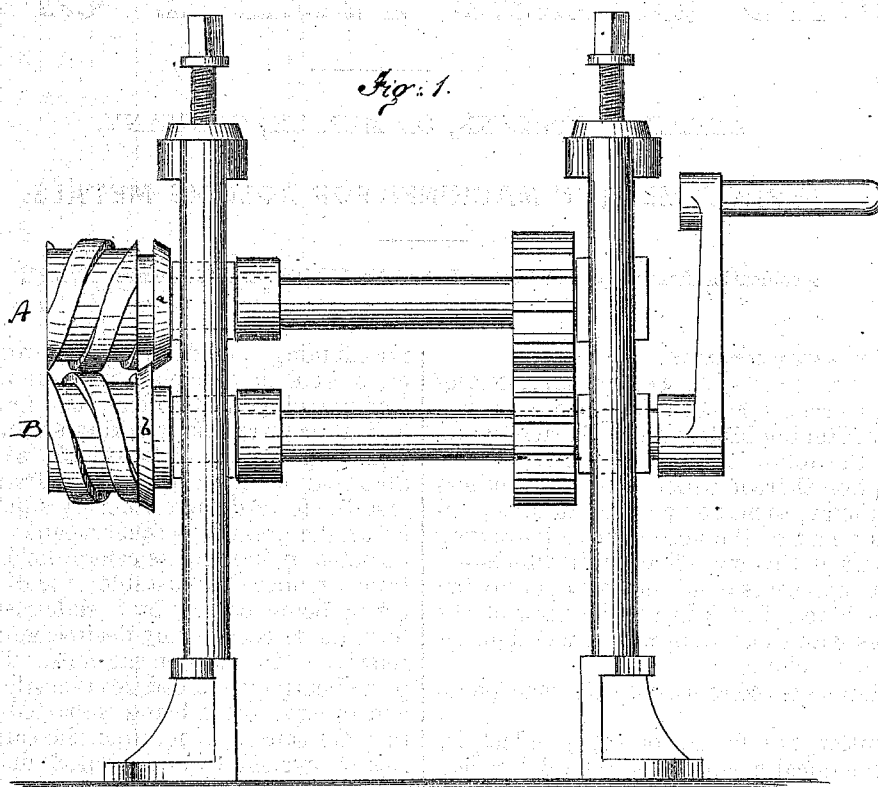


No. 119,160.

Patented Sep. 19, 1871.

A. Sismann's Machine for Rolling Metal.

[66.]



Witnesses:

Chas. Nida
Wm H. C. Smith.

Inventor:

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UNITED STATES PATENT OFFICE.

ABRAHAM LISMANN, OF MUNICH, GERMANY.

IMPROVEMENT IN MACHINES FOR ROLLING METALS.

Specification forming part of Letters Patent No. 119,160, dated September 19, 1871.

To all whom it may concern:

Be it known that I, ABRAHAM LISMANN, of Munich, in Germany, have invented an Improved Machine for Rolling Metal; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a side elevation of my improved machine. Fig. 2 is a front view of the same. Figs. 3 and 4 are diagrams of metal plates rolled in the machine.

Similar letters of reference indicate corresponding parts.

My invention has for its object to effect, by certain mechanical means hereinafter described, the processes of thinning and drawing out plates of metal, which have heretofore been carried out by hand. These operations, which occur principally in coppersmiths' work, are now effected by hand, as follows: For thinning and drawing out the edges of circular plates the same are hammered in consecutive rows, commencing at the inner circumference of the part to be thinned and extending in a tangential direction to the outer circumference of the plate. For thinning and drawing out the edges of square or polygonal plates they are in like manner hammered in consecutive rows, extending from the inner portions of the plate in a slanting or angular direction toward the outer edges. For working the metal into dished or spherical forms the plate is hammered in consecutive rings, extending from the center of the plate toward the outer edge, such blows being effected by a hammer-head with a spherical or convex surface upon an anvil having a concave surface.

According to my invention these operations are performed by rolls A B, having helical or screw-like surfaces, so formed that when revolved they will act upon the metal in a series of consecutive cycloidal or tangential lines, extending, in like manner to the before-described hammer-blows, in oblique directions from the inner toward the outer edges of the parts of the metal plate to be operated upon. These helical surfaces are formed either convex, concave, or plane, as the nature of the work may require. Thus,

for thinning and subsequently working up the edges of a circular plate into the form of a rim, I arrange a pair of rollers, having the aforesaid helical or screw-like working surfaces, upon the overhanging ends of two shafts carried on suitable bearings in head-stocks or framing, and adjustable toward each other by adjusting-screws, hydraulic presses, or other means. The plate to be acted upon is, at its center, held by a stirrup-frame, rendered adjustable to and from the rollers by being carried by a slide-rest, which may be made to assume any desired angular position relative to the axes of the rolls. The rim of the plate being introduced between the helical rolls and rotary motion being imparted to the latter, they are caused to act upon the said rim in a series of cycloidal or tangential lines extending from the inside of the plate to the outer circumference thereof, as before described, the plate being, at the same time, caused by this action to revolve upon its center, where it is held by the stirrup-frame. The helical surfaces of the rollers may either be formed upon both or one roll only, the other having a plane surface. Such plane roll may be made of less diameter than the other, if circumstances should require it. The rolls may furthermore be formed either with only one helical surface, extending right round the roll, or, if the nature of the work requires that the pitch of the helical surface shall be greater than is attainable by one such surface only, two or more helical surfaces of greater pitch may be formed on the rolls. The rolls may be formed with projecting rims *ab* overlapping each other, so as to act as circular shears for shearing off any superfluous length of the rim of the plate after it has been drawn out and turned up, as described. For working a metal plate so as to convert it into a dished spherical form only one such before-described helical roll is employed, the other being replaced by a spherical surface carried by a suitable hinged frame. The helical roller is in this case formed with a number of separate short helical concave surfaces, with spaces between them, so that, as the joint action of this roller and the spherical roll has to take place in concentric rings upon the plate, as before mentioned, the plate may be shifted for this purpose when, by the revolution of the helical

roll, one of its spaces comes underneath the spherical roll.

Fig. 3 shows a plan of a circular plate so marked as to show how it is immediately affected by the helical rollers. Fig. 4 is a plan of a straight-edged plate, marked in similar manner.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—
The helical rolls A B, constructed substantially

as shown and described, for the purpose of drawing out and thinning metal plates.

The above specification of my invention signed by me this 3d day of April, 1871.

ABRAHAM LISMANN.

Witnesses:

ALEXANDER FOBST,
F. NIEDERMAYER.