(No Model.)

C. REICH.

APPARATUS FOR AUTOMATICALLY GUIDING SKIN MOLDS IN MACHINES FOR MAKING LEAF METAL.

No. 489,642. Patented Jan. 10, 1893.

Fig: 1.

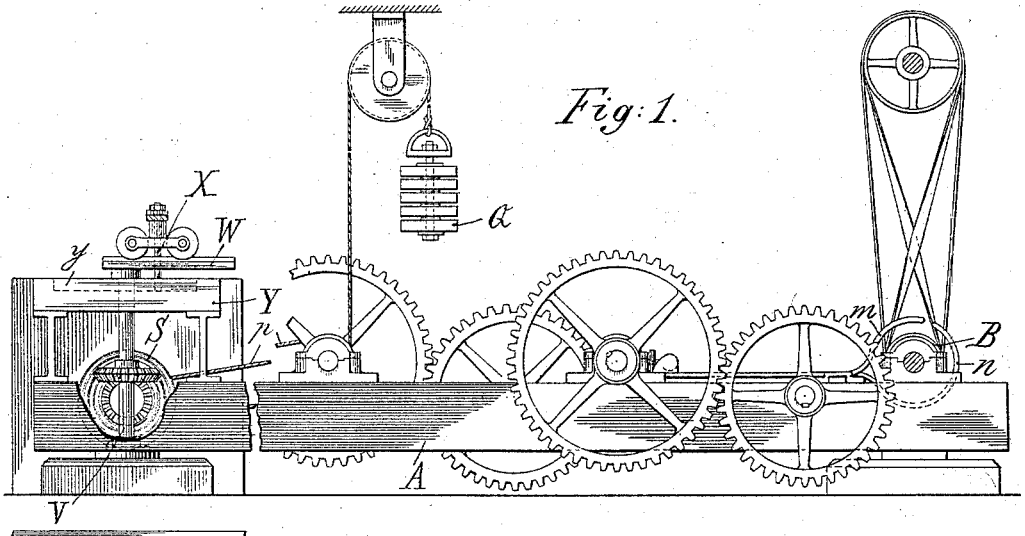
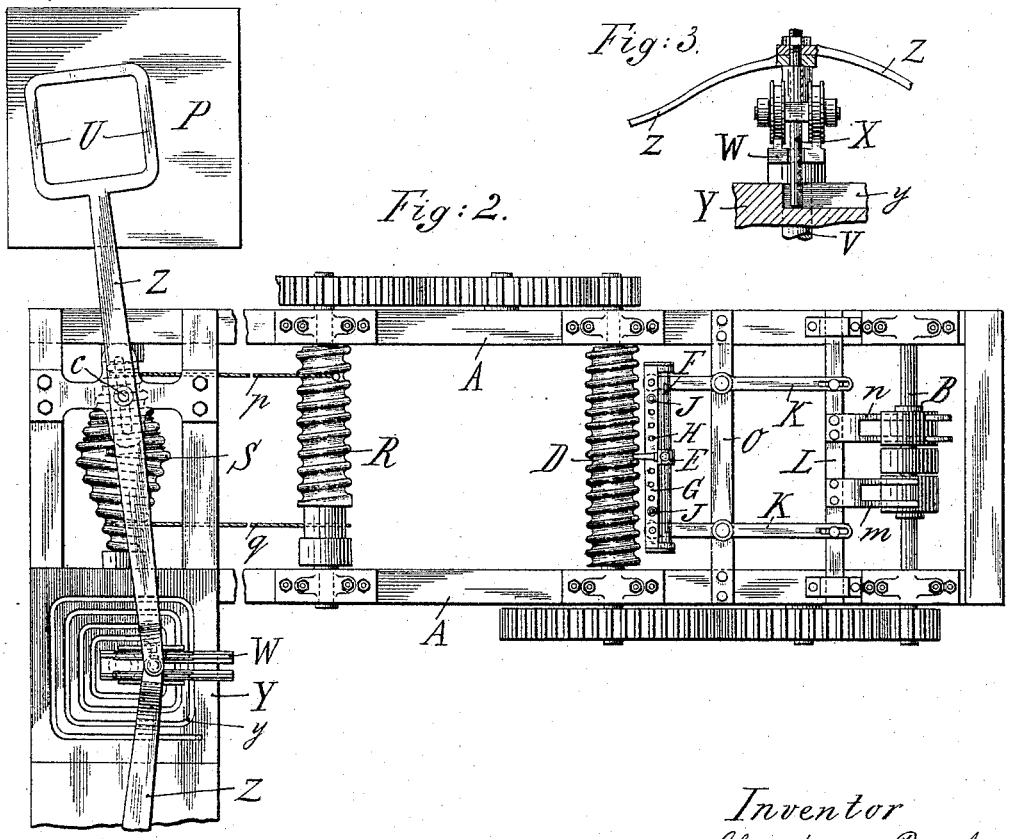


Fig: 3.

Fig: 2.



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CHRISTIAN REICH, OF NUREMBERG, GERMANY.

APPARATUS FOR AUTOMATICALLY GUIDING SKIN MOLDS IN MACHINES FOR MAKING LEAF METAL.

SPECIFICATION forming part of Letters Patent No. 489,642, dated January 10, 1893.

Application filed June 1, 1892. Serial No. 435,183. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN REICH, a subject of the King of Bavaria, residing at Nuremberg, in the Kingdom of Bavaria, in the German Empire, have invented a new and useful Improved Device for Automatically Guiding Skin Molds in Machines for Making Leaf Metal, of which the following is a specification.

My invention relates to an improved device for automatically guiding the skin forms in machines for making fine sheet or leaf metal the object of the same being to supersede the uncertainty of the hand guiding by the absolutely accurate mechanical guiding of the parts. During the process of beating leaf gold or other leaf metal the molds are manipulated by the gold or metal beaters above the surface of the marble which takes the place of an anvil. This guiding of the mold by hand has remained in general use even with mechanical beaters and it is therefore the object of this present invention to effect the guiding of the mold beneath the hammers of the machine automatically and without the assistance of a workman.

Figure 1 is a side view and Fig. 2 a top view or plan of my improved device. Fig. 3 is the elevation of one of the guides on an enlarged scale.

My machine includes a table Y having a convolute guide groove *y* in its surface into which projects peg X connected to the lever Z, of the mold holder U, and carried by trucks or sheaves movable laterally on the guide arm W to which movement is given by a central shaft and gearing.

The adjustable gearing is represented in the drawings accompanying this specification and consists of the driving shaft B with preferably two loose pulleys 5 and an intermediate fast strap drum 6 so that a driving strap can be shifted from one or the other loose pulley onto the fast pulley or drum. The shifting rod carrying the strap forks *m*, *n*, is guided in suitable bearings on the frame A and is operated by means of two levers K K the fulcra of which are arranged in a transverse rod or beam O while the shorter arms of the levers K K are coupled by a rod or rail G provided with borings H for the stop pins or pegs J J and connected to a sliding rod F with slide E so as to serve as a guide for the said rod F. A nose of the slide E gears into the threads of a worm or screw D so that when this worm D is operated by means of gear wheels or straps and drums from the driving shaft B in the one or other direction the said slide E of the rail F will be caused to move a distance regulated by the stop pegs in the rail G. As soon as the nose or projection for the slide E strikes against one of these pegs the frame like lever connection G, K K will shift the one or the other strap onto the fast pulley and thus produce a rotation in the one or other direction. By inserting the pegs J in appropriate borings H of the rail G the reversal of the motion and shifting of the straps can be attained as soon as the requisite number of revolutions is reached.

The reversing motion is transmitted by suitable gear wheels to an appropriate worm R in order to effect the coiling or winding of the cords or the like. One or more cords *p*, *q* run from the worm R to a doubly conical worm S so that the one end of the cord *p* is for instance attached to the outer end of the worm R and, is then wound onto the conical worm S, to the largest part of the periphery of the same so as to cause motion by the unwinding of the cord, whereas the cord or rope *q* is attached to the smallest end of the conical worm drum S and is only loosely laid round one of the grooves in S and carries at its other end a weight Q. In consequence of the action of this weight Q the reverse revolution of the parts is caused and the cord or rope *p* wound onto the conical worm drum S so long as the worm R continues to rotate in opposite direction. The worm drum S transmits its alternating rotary movement by a pair of bevel wheels to the vertical shaft V carrying the guide arm W so that the same is moved above the spiral groove *y* of the table Y. The guide pin X gliding in the convolute groove *y* is arranged on a small carriage running on rolls in order to facilitate the radial movement as shown in Fig. 1 the guide arm W acting as rails for same. The form of the rectangular guide way *y* with rounded corners is arranged to correspond with the decreasing diameter of the conical worm S, so that when the driving cord or rope acts on the smallest part of the periphery of the worm drum S the

guide pin will stand in the ways at shorter distance from the center V and in this manner the pin X will always move a like distance it being immaterial whether the same is in the central or outer parts of the spiral guide ways.

The simultaneous movement of the frame like rim U for holding the mold over the surfaces of the anvil P P is derived from the movement of the guide pin X as follows: The rims U form the ends of levers Z Z (Fig. 2) the other ends of which are attached to the pin X the fulcra of the levers being arranged at *c* in the center of their length said fulcra being arranged in the slots of suitable rails so that the position of each fulcrum can be adjusted. If the length of the levers and the distance from the center of the rim U to the fulcrum are the same the rim U with the mold will be so guided that various points of the mold are continuously being brought beneath the beaters or hammers which is necessary in order that the metal may be beaten equally thin on the marble blocks P P forming the anvil. By inserting the stop pins J J of the reversing gear in different borings of the rail G the play of the mold surface to be beaten may be governed, the operation of the parts being regulated by the speed given to the driving mechanism.

Having now particularly described the nature of my said invention and the manner in which the same is to be performed, I declare that what I claim and wish to secure by Letters Patent is:

1. In combination, the holder U, the lever carrying the same and having a pin, the table having a convolute groove into which the pin projects, the shaft at the central part of the groove the arm attached thereto and projecting laterally therefrom over the convolute groove, said arm having sliding connection with the pin of the lever and means for operating the shaft, substantially as described.

2. In combination, the holder, the lever carrying the same, the pin on said lever, the table having a convolute groove receiving the said pin, the shaft at the central part of the convolute groove the arm connected to the shaft and projecting laterally therefrom over the convolute groove, said arm constituting a guide rail, the rolling truck carrying the pin and moving on the lateral arm and means for operating the shaft, substantially as described.

3. In combination, the holder, the pivoted lever carrying the same, the pin on the lever, the table having a convolute groove to receive the said pin, the shaft at the central part of the said convolute groove, the laterally extending arm connected to said shaft and having a sliding connection with the pin the gearing for operating the shaft and the reversing mechanism therefor, substantially as described.

4. In combination, the holder, the pivoted lever carrying the same, the pin on the lever, the table having a convolute groove to receive the said pin, the shaft at the central part of the groove, the arm extending laterally therefrom, and having sliding connection with the pin and the speed changing driving mechanism and reversing devices for operating the shaft, substantially as described.

5. In combination, the holder, the pivoted lever carrying the same, the pin on the lever, the table having a convolute groove to receive the said pin, the shaft at the central part of the groove, the arm extending laterally from said shaft and having a sliding connection with the lever pin, and the driving mechanism for the said shaft including the cone drum and the winding cords, substantially as described.

6. In combination, the holder U, the lever carrying the same, the plate having a convolute groove to receive a pin on the lever, the shaft having an arm thereon in sliding connection with the pin, and the driving mechanism for the said shaft including reversing devices, said devices comprising the spiral drum R, the slide E, the adjustable stops, the belt shifters and the connections thereto from the stops, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CHRISTIAN REICH.

Witnesses:
J. D. HEYERMANN,
CARL FRIEDERICH.