No. 611,120. Patented Sept. 20, 1898.

W. M. HAMILTON.

AUGER TWISTING MACHINE.

(Application filed Feb. 8, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Witnesses.

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F. C. Barry

Inventor.

Wm. M. Hamilton

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UNITED STATES PATENT OFFICE.

WILLIAM M. HAMILTON, OF CLINTON, INDIANA.

AUGER-TWISTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 611,120, dated September 20, 1898.

Application filed February 8, 1898. Serial No. 669,579. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. HAMILTON, of Clinton, in the county of Vermilion and State of Indiana, have invented certain new and useful Improvements in Auger-Twisting Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain new and useful improvements in twisters for use in the manufacture of augers, drills, bits, &c.

The invention consists in certain novel features of construction and in combinations of parts more fully described hereinafter and particularly pointed out in the claims.

The object of the invention is to provide a twisting-machine simple, cheap, and durable of construction, accurate of operation, and composed of a minimum number of parts.

A further object of the invention is to provide a twisting-machine which will evenly twist a flat bar of metal into a spiral for augers, drills, &c.

A further object of the invention is to provide a traveling gage and guide operated to control the pitch or thread of the spiral and to keep the metal in a true line.

A further object of the invention is to provide graduated differential gears to move the traveling carriage and control the number of turns of the spiral to the inch, as desired, for varied-sized augers or bits.

A further object of the invention is to provide means for holding the metal to be twisted taut and at the same time allow for the take-up in twisting.

Referring to the accompanying drawings, forming part of this specification, the same letters indicate like parts throughout the different views, in which—

Figure 1 is a perspective view of the machine. Fig. 2 is a top plan. Fig. 3 is a central vertical longitudinal section. Fig. 4 is a cross-section on the line *x x*, Fig. 1. Fig. 5 is a modification of the traveling carriage, which also shows means for moving the carriage in either direction when not in operation.

Referring by letter to the accompanying drawings, *a* is the base or frame of the machine, having at each end the heads *b*, through one of which passes the shaft *c*, carrying the clamp *c'*, which is revolved by means of suitable gearing *d* from the belt-pulleys *d'*. Differential and intermediate gears may be used when augers of different sizes are to be twisted. Through the other head *b* works the rod *e*, carrying a clamp *e'* at one end and at the other the weight e^2, connected thereto by a flexible cable *f*, which passes over the pulley *f'* and holds the bar taut and at the same time yields as the bar shortens by twisting.

g are longitudinal ribs or guides formed on the upper outer edge of the frame *a*, over which the traveling carriage-gage *h* is movable by means of the worm-screw *i'*, which runs longitudinally in the center of the frame through the carriage *h*, it operating it by means of the cog-wheel *j*, meshing with the gearing *d*.

The carriage-gage *h* is provided with a pair of rollers *k*, set vertically in the recess *l* and adapted to bear tightly and rotatably against each side of the flat metal *m* which is to be twisted and which is secured at one end in the revolving clamp *c'* and at the other end in the weight-actuated clamp *e'*. The gearing is so arranged that the carriage-gage *h* will travel on the worm-screw *i* just ahead of the last turn in the spiral and hold the metal for the next turn. The carriage-gage is provided with toes *o*, engaging the guide-slide *g* to hold it in position while the metal is being twisted.

In operation the device is very simple. A flat piece of metal to be twisted is secured in the clamp *c'* by the set-screw c^2, then passed down through the opening *n* between the rollers *k* of the traveling carriage-gage, which is arranged close up to the clamp *c'*. Then the clamp *e'* is drawn up against the tension of the weight and secured to the other end of the flat metal. The machine is then set in motion by means of the gearing, which twists the metal and at the same time moves the carriage-gage along the guide-ribs *g*, controlling the pitch or thread of the spiral. The

rollers in the carriage may be changed to suit different thicknesses of metal plates, according to kind of auger to be made, or they may be adjusted by set-screws when the journals are placed in oblong bearing, or the rollers *k* in this case may be omitted.

The movable carriage (shown by Fig. 5) is to one side of the center of the frame *a*. The antifriction-rollers *k k* project out from the head and are arranged to hold the metal bar *m* from turning in the frame *a*, and the lower portion of the carriage is just the same as that shown by Fig. 1.

A, Fig. 5, is a pinion which meshes in a rack formed on the frame *a*, and C is a hand-wheel by which the pinion is turned. The object of these is to run the carriage back and forth when the machine is not in operation.

It is evident that various slight changes might be made in the forms, constructions, and arrangement of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to confine myself to the exact construction herein set forth, but consider myself entitled to all such changes that fall within the scope of the invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. A twisting-machine having a frame, head-blocks at each end thereof, a revolving clamp working in one of said head-blocks, a laterally-moving weight-actuated clamp working in the other, the metal bar to be twisted being secured between said clamps, a traveling carriage having rollers bearing rotatably on said metal bar, and controlling the twist thereof and gearing graduated to operate the twisting-clamp and traveling carriage as desired, substantially as set forth.

2. In a twisting-machine the combination of the frame, the clamps, a traveling carriage, a worm-screw carrying said carriage, rollers journaled within said carriage and adapted to hold and control the twist of the metal to be bent, substantially as set forth.

3. In a twisting-machine the combination of the frame, the guide-ribs formed longitudinally thereon, a traveling carriage running on said frame, rollers carried by said carriage adapted to guide and control the twist of the metal, a worm-screw moving said carriage and operated by gearing arranged in the proper ratio to the twisting-gearing to form the desired pitch or thread, substantially as set forth.

4. A movable guide-carriage for twisting-machines or the like, comprising the head having its base undercut holding a guide-toe, a downwardly central projection adapted to carry a screw, the upwardly-projecting jaws arranged to form a chamber between them, antifriction-rollers working in said chamber and journaled in said carriage to hold in a true line plates or bars for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM M. HAMILTON.

Witnesses:
CARL BLACK,
ADAH LEITON.