2 Sheets—Sheet 1.

B. F. ABBOTT.

SPIRAL MOLDING MACHINE.

No. 183,243. Patented Oct. 17, 1876.

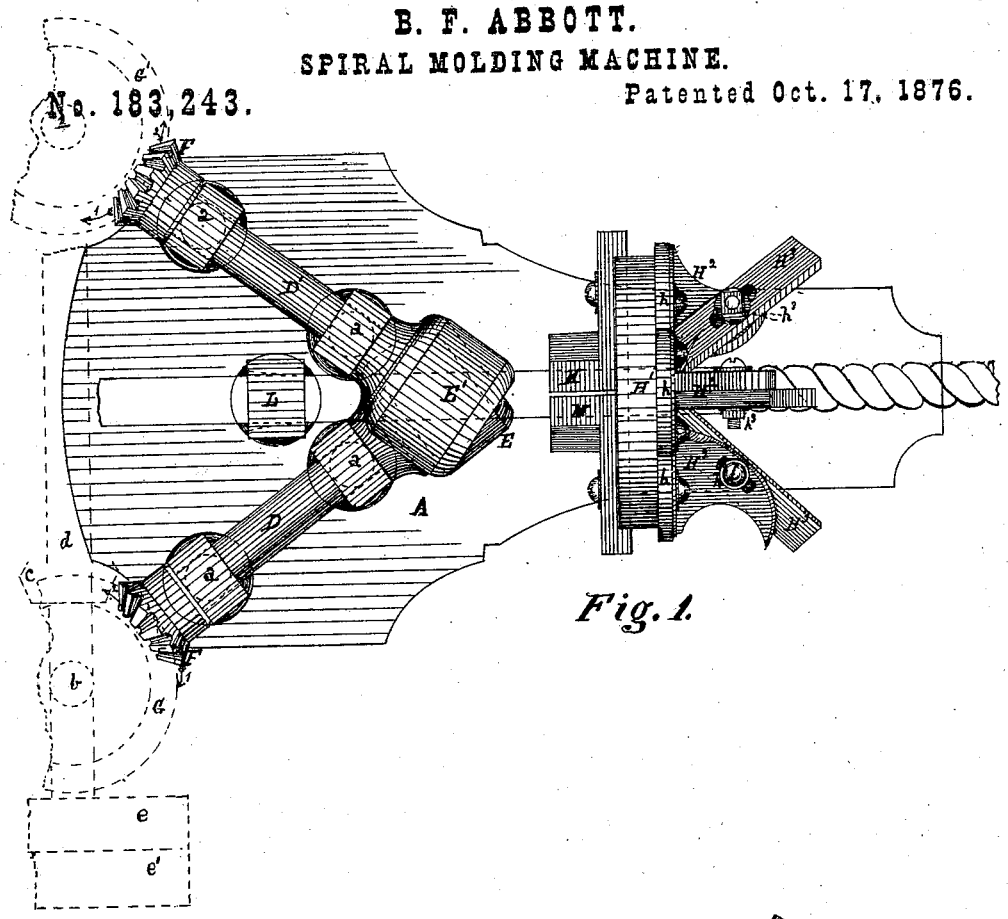

Fig. 1.

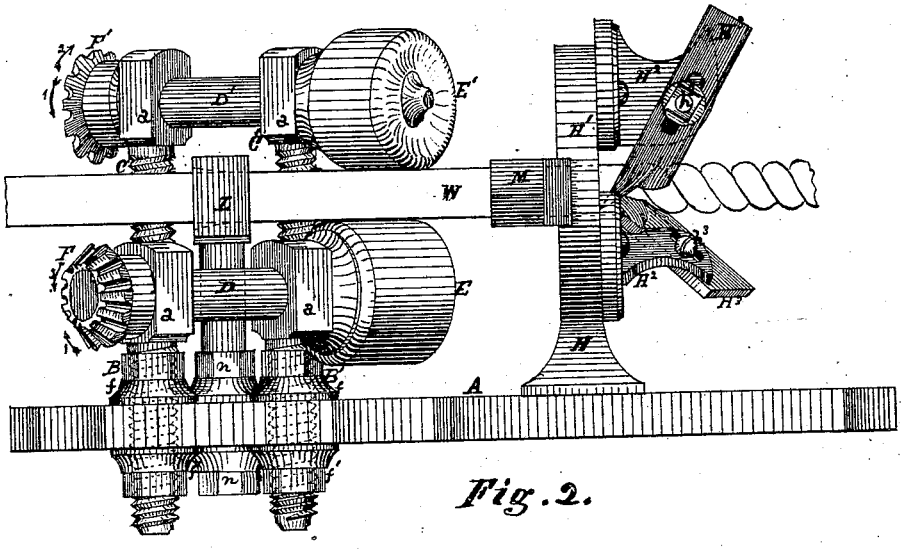

Fig. 2.

Witnesses { Chas. J. Selkirk
James Coner

Benjamin F. Abbott
by his attorney
Alex. Selkirk

Inventor.

2 Sheets—Sheet 2.

B. F. ABBOTT.

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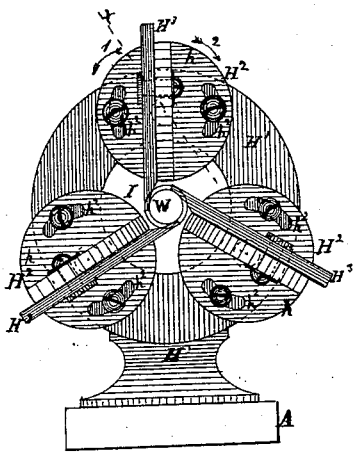

Fig. 3.

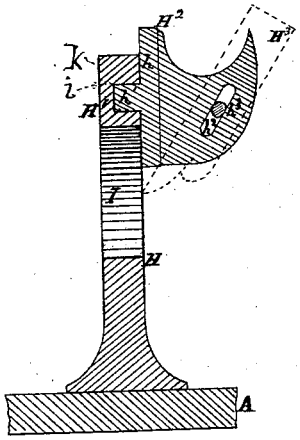

Fig. 4.

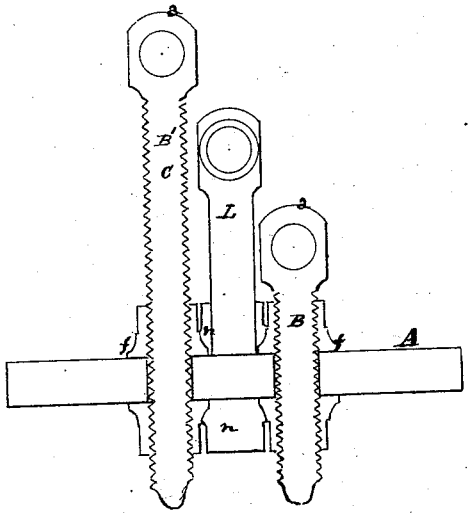

Fig. 5.

Witnesses { Chas. J. Selkirk. James Boner.

Benjamin F. Abbott
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Alex. Selkirk

Inventor.

UNITED STATES PATENT OFFICE.

BENJAMIN F. ABBOTT, OF ALBANY, NEW YORK.

IMPROVEMENT IN SPIRAL MOLDING-MACHINES.

Specification forming part of Letters Patent No. **183,243**, dated October 17, 1876; application filed September 17, 1874.

To all whom it may concern:

Be it known that I, BENJAMIN F. ABBOTT, of the city and county of Albany, State of New York, have invented a certain Improvement in Spiral Molding-Machines; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1, Sheet 1, represents a view from above of the machine embodying the improvements in this invention. Fig. 2 is a side view of the same. Fig. 3, Sheet 2, is an elevation of the cutting-head and its several adjuncts. Fig. 4 is a sectional elevation of the same. Fig. 5 is a cross-sectional view, taken at line No. 1 in Fig. 1.

My invention relates to that class of molding-machines, operating on wood, for producing spiral forms on its periphery; and consists in the several devices and combinations of parts which I will proceed to describe in reference to the drawings and the letters of reference marked thereon, the same letters indicating similar parts.

In the drawings, A represents the base-plate of the machine, from which the several parts are supported. B B′ and C C′ are standards, secured to the base-plate A, and carrying the bearings *a a a a*, in which the shafts D D′ revolve. The said shafts carry the feed-rollers E E′, and are revolved with the shafts D D′ by the bevel-gear F F′, which are driven by proper gears G G′, attached to the vertical shafts *b b*, revolved by the gear *c*, attached to the horizontal shaft *d*, operated by the band-pulley *e*, as shown in Fig. 1. *e′* is a loose pulley. (Shown by dotted lines in the same figure.) The standards B B′ and C C′ consist each of a shaft cut with a screw-thread on their outer periphery, as shown in Figs. 2 and 5, and are secured to the base-plate A by the screw-threaded nuts *f f*, Figs. 1, 2, and 4.

The standards B and B′ are made with a less height than the standards C C′. Each pair B B′ and C C′ may be variously adjusted in their height, so as to increase or diminish the distance between the rollers E E′, as may be desired, or may be required by the diameter of the piece of wood W to be operated upon.

If the piece W is of larger diameter, the standards B B′ must be lowered, while the standards C C′ must be elevated. This lowering of the standards B B′ is effected by running up the nuts *f f* on the standards until the shafts D D′ are brought down to a proper distance, to increase one-half of the desired increased diameter between the rollers E E′, while, to lengthen the height of standards C C′, the nuts *f′ f′* are to be run down, and the nuts *f f* are to be tightened down to the base-plate A to elevate the said standards C C′ to a height sufficient to increase the other half of the desired increased diameter between the said rollers. A reverse operation with the said nuts *f f* will elevate the roller E and depress the roller E′, so as to render the rollers capable of operating upon a piece of smaller diameter.

By this manner of construction and mode of attachment of the standard with the base-plate A, any desired distance between the rollers may be effected and permanently secured.

When the standards B B′ are placed on the right side of the machine, and the long standards C C′ on the left side, and the shafts D D′ are revolved in the direction indicated by arrows No. 1 in Figs. 1 and 2, the piece W will be revolved and carried forward in a manner which will effect a left-hand spiral form of surface of periphery when the cutting-tool is made to act on the side of the piece W toward the short standards B B′.

When the standards B B′ and C C′ are changed in their places to the reverse of that shown in Figs. 1 and 2, and band-pulley *e* is made to revolve in an opposite direction by the crossing of the belt, so as to cause the rollers to revolve in a direction indicated by arrows No. 2 in Figs. 1 and 2, and the cutting-tools are set to operate on the left-hand side of the piece W, and opposite to that shown in the said figures, the spiral will be made on the periphery of the piece with a right-hand form.

The cutter-head H consists of the fixed or stationary piece H^1, secured firmly to the base-plate A, the adjustable cutter-holders H^2, and cutters H^3, Figs. 1, 2, 3, and 4. The fixed or stationary piece H^1 may be made of any de-

ired form, with a central opening, I, Fig. 3, hrough which the piece W may pass when arried forward by the rollers E E′, and has rranged with it the adjustable cutter-holders I², which consist of the base-piece *h*, provided vith the pivot h^1, working in the piece H^1, on vhich pivot the said cutter-holder may be urned in either direction, as indicated by lotted lines in Fig. 3. Slot-holes h^2 are also nade in the said base to receive the holding-screws h^3, as shown in Figs. 1, 2, and 3, which screws work into the piece H. Cast solid with he said piece H^1 is the bracket *k*, provided with a slot, *i*. H^3 H^3 are the cutters, made with any form of cutting-edges that may be capable of producing the desired configuration to be given, in a spiral direction, to the piece W.

It is intended that the cutters H^3 H^3 should be made with their cutting-edges formed from the side lying next to the bracket, so that in cutters to be used to cut left-hand spirals the edges will be formed from the sides, as represented in Fig. 3, while for cutting right-hand spirals the said edges should be formed from the opposite side, and each machine to be used for cutting right and left hand spirals should be supplied with both right and left hand cutters.

By these forms of construction and arrangement of parts the one cutter-head is rendered capable of being used for operating upon pieces of different diameters, say, from three-quarters of an inch to five inches, more or less, diameters according as the several parts may be adjusted to cut spirals of either right or left hand form of direction.

When the piece to be operated upon is of small diameter, and its spiral form is to be cut left-hand, the cutter-holder H^2 is to be swung on its pivot h^1 in the direction indicated by arrow 1 in Fig. 3, and the cutter is to be secured on the side toward which the piece W revolves, as shown in the same figure. If a piece of larger diameter is to be operated with, the said cutter-holder is to be swung in the direction indicated by arrow No. 2 in Fig. 3, more or less, so that the adjustable cutter-holders H^2 H^2 and the cutter H^3 H^3 will be made to stand relatively as indicated by dotted lines *x* in Fig. 3. The placing of the right-hand cutters, referred to heretofore, on the opposite side of the bracket, and reverse shifting of the cutter-holders, will produce a proper adjustment of the cutters to form right-hand spirals upon pieces of different diameters.

To preserve the piece W central with the machine, and to guide it in its travel forward in a direct manner, the hollow centering-piece L is placed back of the rollers E E′, and the guide M M forward of the said rollers, and preferably supported by and connected to the cutter-head H. The hollow centering-piece L may be made adjustable by thimbles, while the guides M M are made capable of adjustment by working in ways cut in the cutter-head, and provided with slots and set-screws *n n*, working through the said slots and into the cutter-head, as shown in Fig. 1, so as to be capable of being variously set to adapt the spread of the guides to the diameters of the pieces to be operated upon.

To operate with this improved machine, the piece W to be cut being first rounded in a rounding-machine preparatory for the same, is passed through the hollow centering-piece L and pushed forward so as to enter between the rollers E E′, when the said rollers will carry the same forward into the guides M M through the stationary piece H^1 of the cutter-head H, and, twisting the said piece at the same time against the cutters H^3, will cause the said piece W to have cut on its periphery a spiral or series of spirals, according to the number of cutters employed and of the form to correspond with the form of the cutters.

By these improvements, in a machine of comparatively small size, pieces of great length and of varying diameters may be cut with either right or left hand spirals.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The vertically-adjustable feed-rollers E E′, secured to the shafts D D′, and so placed that their axial lines will be at acute angles with each other, in combination with the gears F F′, by which the said rollers are revolved, substantially as and for the purpose set forth.

2. In combination with the feed-rollers E E′, carried by the shafts D D′ placed at acute angles, the bearing-standards B B′ and C C′, of unequal lengths, provided with screw-threads on their entire lengths, and secured to the base-plate in an adjustable manner by the nuts *f f′*, substantially as and for the purpose set forth.

3. The cutter-head H, composed of the stationary piece H^1, cutter-holders H^2, and cutters H^3, in combination with the vertically-adjustable feed-rollers E E′, having their axial lines crossing each other, substantially as and for the purpose set forth.

4. The cutter-holders H^2, composed of the base *h*, provided with the pivot h^1, and the bracket *k*, provided with slot *i*, in combination with the stationary piece H^1, substantially as and for the purpose set forth.

5. In combination with the vertically-adjustable feed-rollers E E′, having their axial lines crossing each other, and the stationary piece H^1 of the cutter-head H, the hollow centering-piece L, and the adjustable guides M M, substantially as and for the purpose set forth.

BENJAMIN F. ABBOTT.

Witnesses:
ALEX. SELKIRK,
CHAS. J. SELKIRK.