E. L. HOWARD.

PLAITING-MACHINE.

No. 169,642. Patented Nov. 9, 1875.

Fig. 4

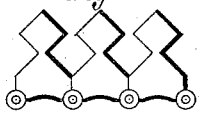


Fig. 5

Fig. 6.

Fig. 2.

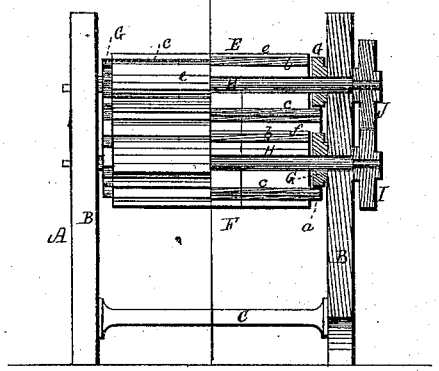


Fig. 1.

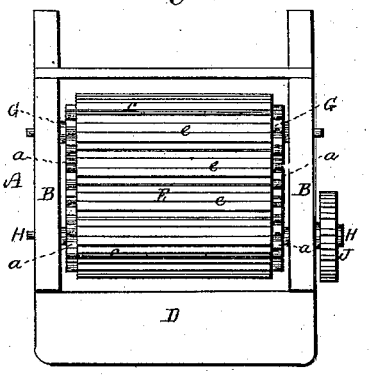
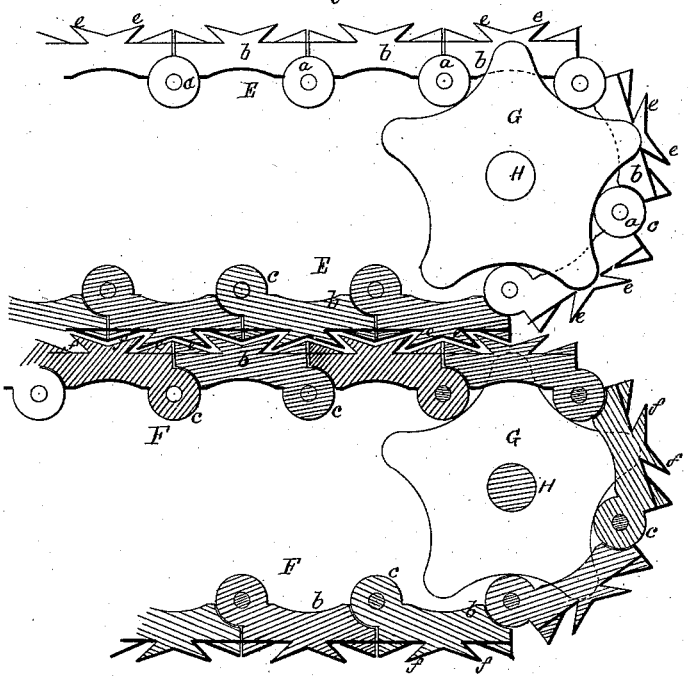


Fig. 3.

Enlarged.



WITNESSES.

F. Gunnewell.

W. E. Boardman.

E. L. Howard,

F. Curtis. Atty.

UNITED STATES PATENT OFFICE.

ELIJAH L. HOWARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND JOHN A. S. GRAVES, OF SAME PLACE.

IMPROVEMENT IN PLAITING-MACHINES.

Specification forming part of Letters Patent No. **169,642**, dated November 9, 1875; application filed February 23, 1875.

To all whom it may concern:

Be it known that I, ELIJAH L. HOWARD, of Boston, Suffolk county, Massachusetts, have invented a Machine for Laying Plaits, of which the following is a specification:

This invention relates to means for laying or running plaits in lace and other fabrics; and consists in the peculiar formation and arrangement of the teeth of a pair of endless aprons, whereby the plaits are laid.

The drawings accompanying this specification represent, in Figure 1, a plan, and Fig. 2 a sectional elevation, of a machine embodying my improvements, while Fig. 3 is a view of a portion of each of its two endless aprons, to be explained, the upper half of this last figure being in end elevation, and the lower half in vertical section. Figs. 4, 5, and 6 are modifications of my invention, to be hereinafter referred to.

In these drawings, A represents the main frame of the machine, consisting of side standards or housings B B, spanned by suitable braces or rods C C, &c., and provided at front with a shelf, D, which is disposed on a plane midway of the aprons, and is to facilitate the introduction and feeding of the fabric between such aprons.

The endless aprons are shown at E and F, the journals *a* of the hinges of each fitting in succession into the notches of sprocket-wheels G, affixed to and rotated by horizontal shafts H, the journals of which are mounted in suitable bearings of the housings B B in a manner that will be understood by all mechanics.

To rotate conjointly the shaft H, wheels G, and aprons E F, I affix to the outer extremity of the front lower shaft a spur-gear, I, which engages a twin-gear, J, affixed to the upper shaft, a crank or pulley being applied to one of the shafts, by which power is transmitted.

Each apron or band, E or F, is composed of a series of thin slats or bars, *b*, &c., joined in parallelism by suitable longitudinal hinges, *c*, &c., the ends of these hinges, as before stated, engaging successively the notches of the sprocket-wheels. The teeth or blades, by which the actual plaiting of the fabric is effected, are shown in pairs at *e e* of one apron, and at *f f* of the opposite apron, these blades being secured to the inner faces of the bars *b*, centrally and parallel thereof. The series of blades of each pair slope upward and outward from a common center at an obtuse angle to the longitudinal plane of the apron, and are of such width that the pairs of blades of one series interlock or engage the teeth of the opposite series, as shown in Fig. 3 of the drawings. The series of teeth of the two aprons approach and meet each other, and, finally, engage and travel together to the extent of the horizontal plane of such aprons. The fabric to be plaited is introduced in a single strip, or two or more layers between the aprons from the shelf D, and is seized by them, and carried along between the aprons, and discharged at the rear ends of the latter, having, in its passage, been folded or plaited into the ordinary form of plaits.

It will be observed that the slope and arrangement of the blades are such that, as the fabric is crowded between, a lap or plait is laid, every alternate lap being laid over or folded in a direction opposite to that of the next adjacent fold, and in this manner the plaiting of the entire fabric is effected.

I do not confine myself to the precise form or slope of the blades *e f*, as these may be varied to a considerable extent without departing from the essential features of my invention, as by slight changes in such form and slope of the teeth I am enabled to produce various designs of plaiting or of fluting. For instance, in Fig. 4 of the drawings, I have represented a form of teeth for producing "square box fluting," so called, in Fig. 5, a form of teeth for producing "side plaiting," so called, and, in Fig. 6, a form of tooth for producing "double-box plaiting," so called.

I claim—

In a machine for laying plaits, the combination of two endless aprons, geared to move in unison, and consisting each of jointed sections provided on their contiguous surfaces with undercut sloping blades, constructed and arranged for joint operation, as herein shown and described.

ELIJAH L. HOWARD.

Witnesses:
FRED. CURTIS,
W. E. BOARDMAN.