

(No Model.)

2 Sheets—Sheet 1.

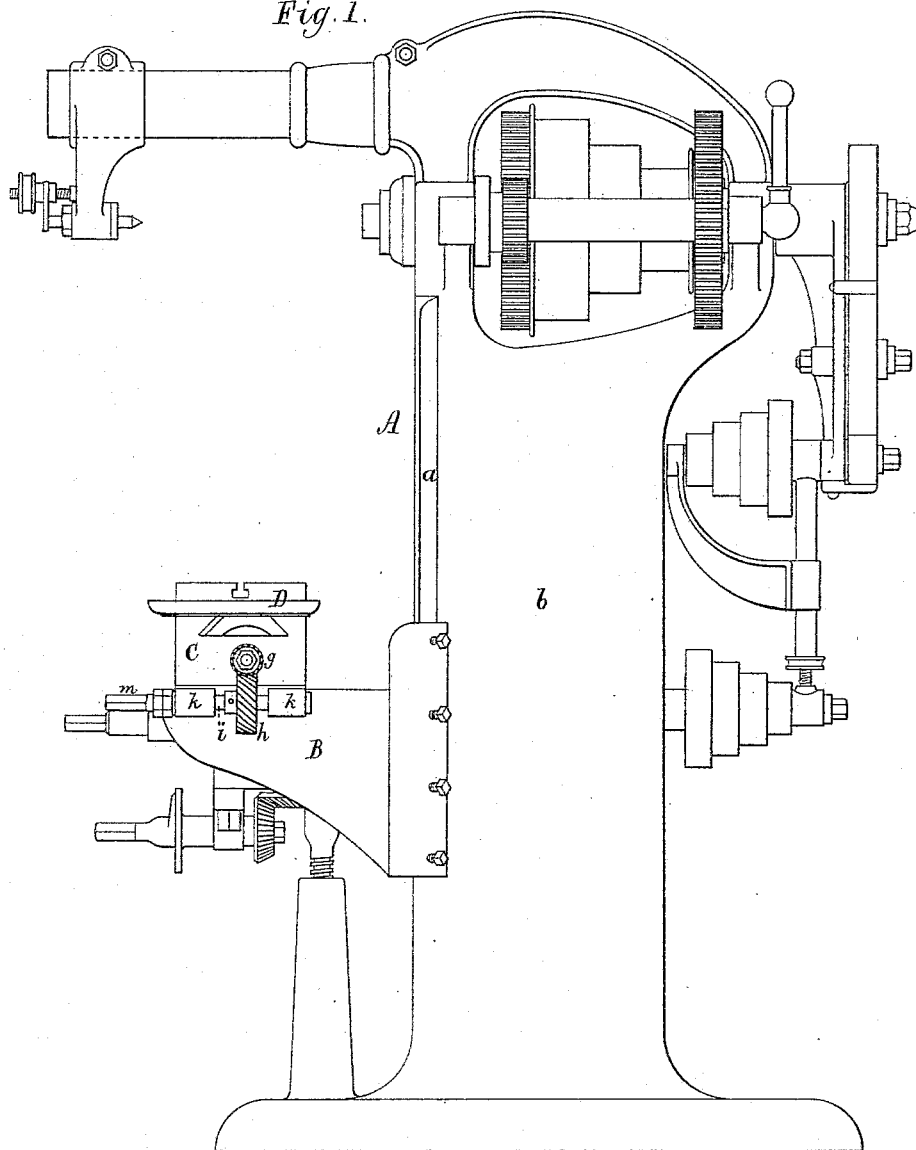
A. H. BRAINARD.

MILLING MACHINE.

No. 381,525.

Patented Apr. 24, 1888.

*Fig. 1.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## MILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 381,525, dated April 24, 1888.

Application filed February 13, 1888. Serial No 263,767. (No model.)

*To all whom it may concern:*

Be it known that I, AMOS H. BRAINARD, a citizen of the United States, residing at Hyde Park, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Milling-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of a milling-machine provided with my improvement. Fig. 2 is a longitudinal and vertical section of the carriage and table, showing the parts connecting each with the other, and also my improvement as applied to the feeding-screw and to the carriage. Fig. 3 is an end view of the carriage and table, and also the mechanism applied to the feeding-screw and carriage above mentioned.

The object of my invention is to facilitate the quick return of the table of a milling-machine after it has been fed or moved forward to enable the milling-tool to act on a piece of work secured to said table; and to this end I furnish the carriage and the feeding-screw with devices which together operate to produce the desired result, as will be hereinafter described.

In the drawings, A denotes a milling-machine; B, the supporting-bracket of the carriage C, said bracket having mechanism applied to it by which it can be moved vertically on ways *a*, forming part of the standard *b*. The carriage C is arranged to move horizontally on the bracket, either toward or away from the standard *b*.

D is the table, adapted to move horizontally on the carriage C, and in a direction at right angles to the direction of movement of the said carriage.

E is the feeding-screw, supported in bearings *c c* in the ends of the carriage, and F a nut which encompasses the screw and is secured to the table D. Fastened on one end of the screw is a worm-gear, *d*, which works with a worm, *e*, connected to a worm-shaft, *f*, and fastened on the other end of the screw is a

spiral pinion, *g*, the teeth of which connect with those of a spiral gear, *h*, secured to a shaft, *i*, the axis of which is arranged at right angles to and in a horizontal plane below but parallel with the plane of the axis of the screw, and is supported in bearings *k*, forming part of a bracket, *l*, fastened to the carriage. The end *m* of the shaft *i* is prismatic to receive a crank, *n*, as shown.

Heretofore in my machine the ends of the shaft of the feeding-screw projected beyond the ends of the carriage, and were formed prismatic, as shown at *o*, either end serving to receive a crank to revolve said screw (when not prevented from so doing by the table projecting over it) when it was desired to return the carriage or run it back, after having been fed forward under the milling-tool, an operation consuming much time.

By my improvement, in a given number of revolutions of the crank *n*, applied to the shaft *i*, I am enabled to move the table a much greater distance than it could be moved by the same number of revolutions of the crank when applied, as formerly, to either end of the screw-arbor, thereby effecting, as will be seen, much saving in time over the old method of returning or running back the table. Furthermore, under the old method it often became necessary, especially when operating on a long piece of work, when it was desired to return the table to apply the crank to that end of the screw-arbor uncovered by the table, and when said table was run back as far as possible with the crank on that end of the arbor said crank had to be transferred to the other end of the said arbor to complete the operation of running back the table to the necessary extent; but with my improvement the table can never interfere with the free use of the crank to run it back, and its location is much more convenient for the attendant to manipulate than formerly. Thus it will be seen that my improvement consists in adding to the feeding-screw E the spiral pinion *g*, and to the carriage the spiral gear *h* and shaft *i*, sustained in bearings in the bracket *l*, all being for the purpose hereinbefore set forth.

Therefore what I claim as my invention is—

1. In a milling-machine, the combination of the carriage and table connected with each other and provided with the feeding-screw

and nut, with the spiral pinion, the spiral gear and its shaft, the latter supported in bearings secured to the carriage, all being arranged and for use substantially as set forth  
5 and represented.

2. In a machine having a carriage and table provided with a feeding-screw and nut, and arranged with each other, substantially as shown, the combination therewith of the spiral pinion, spiral gear, and the supporting-  
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shaft of the latter arranged in bearings secured to the carriage to be operated, and for use essentially as described and represented.

In testimony whereof I affix my signature in presence of two witnesses.

AMOS H. BRAINARD.

Witnesses:

E. C. BRAINARD,  
S. N. PIPER.