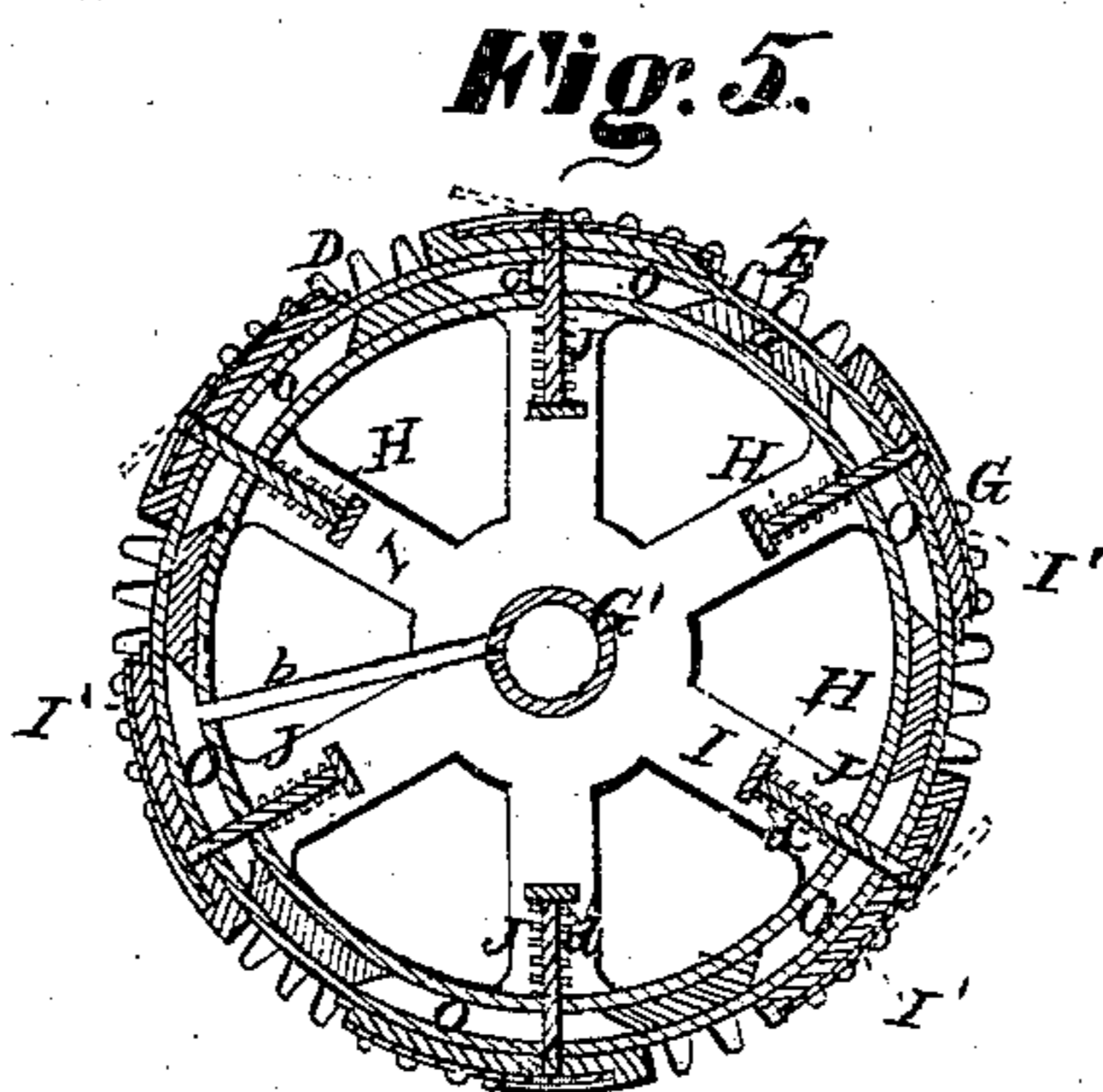
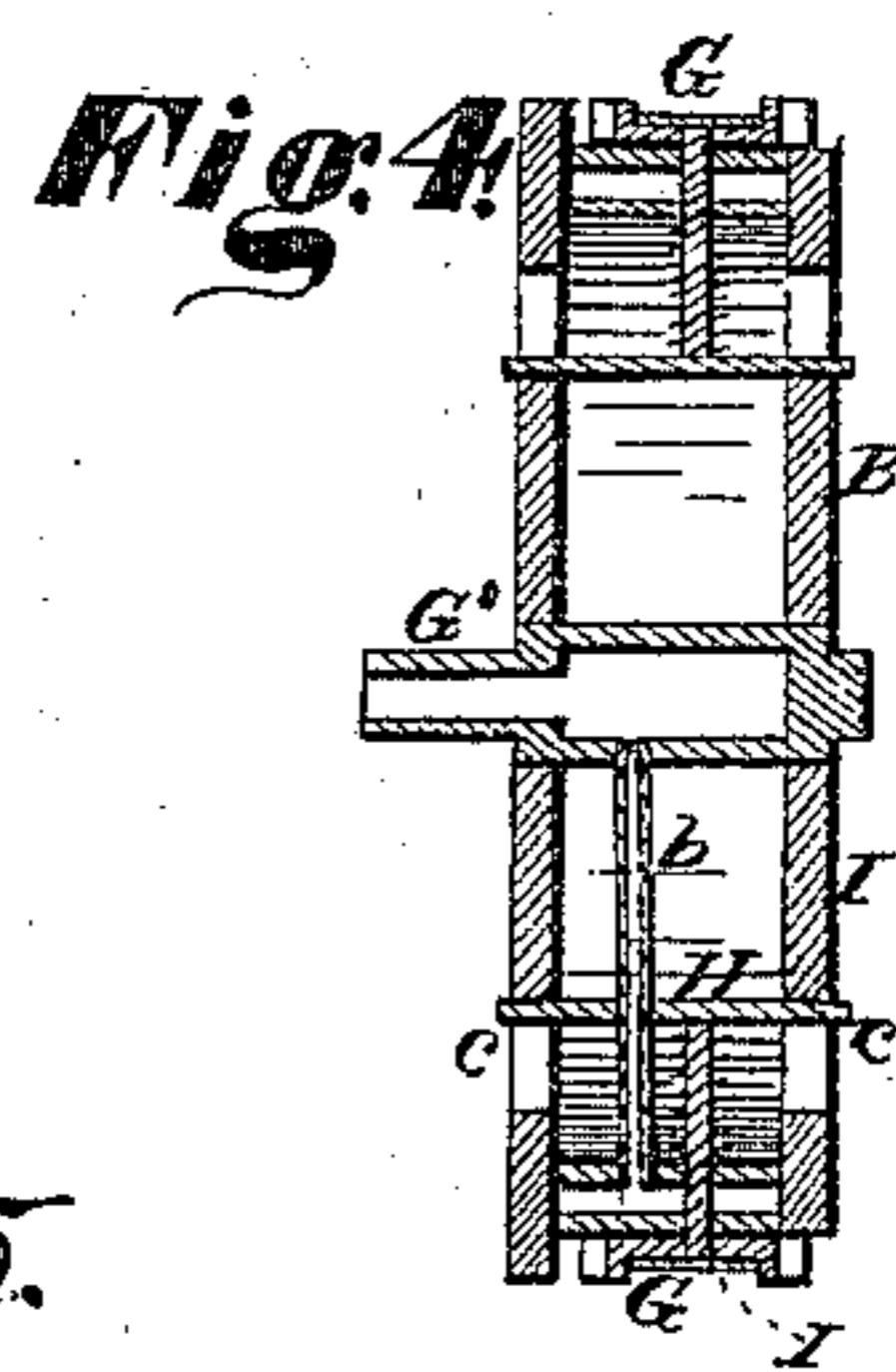
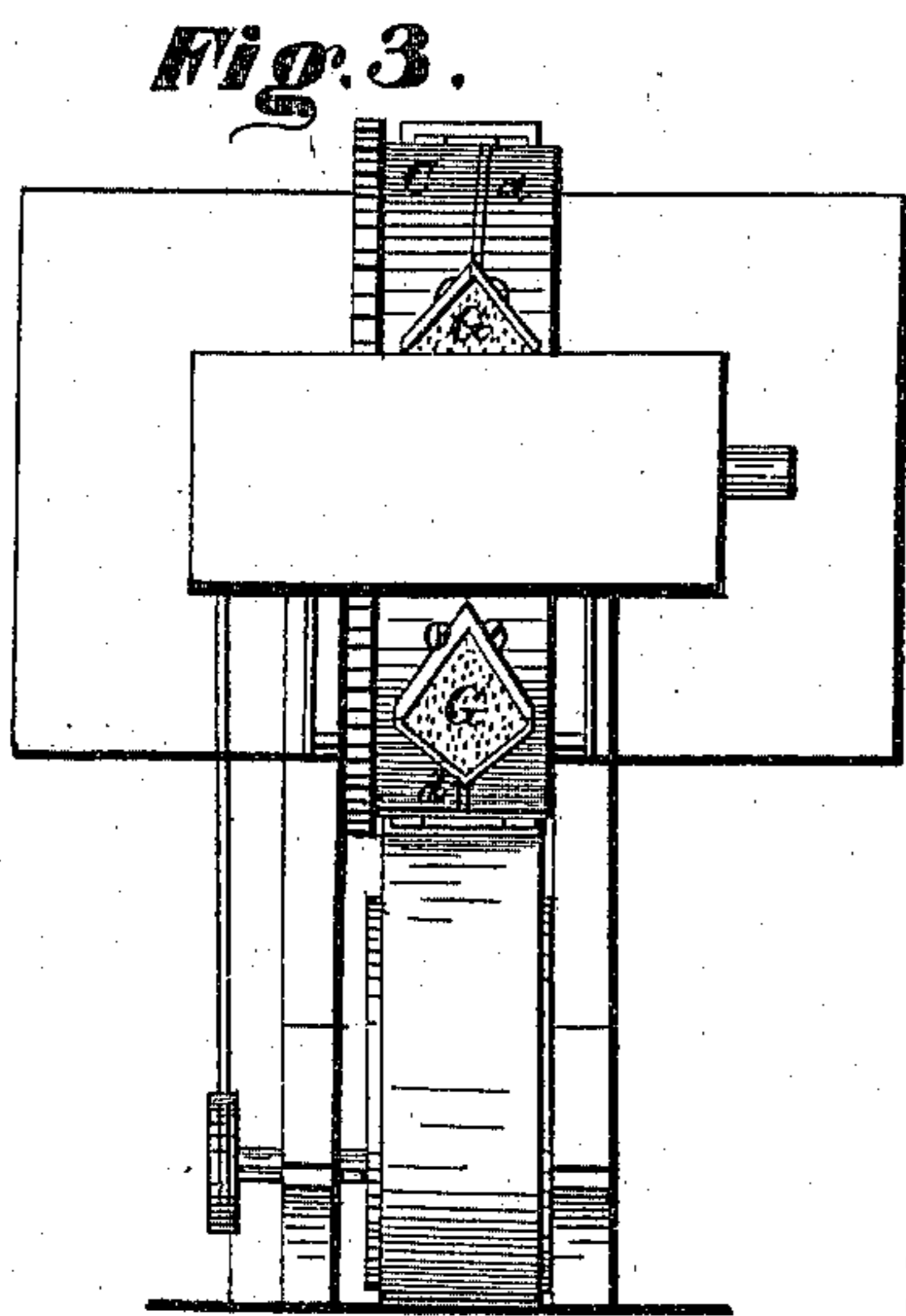
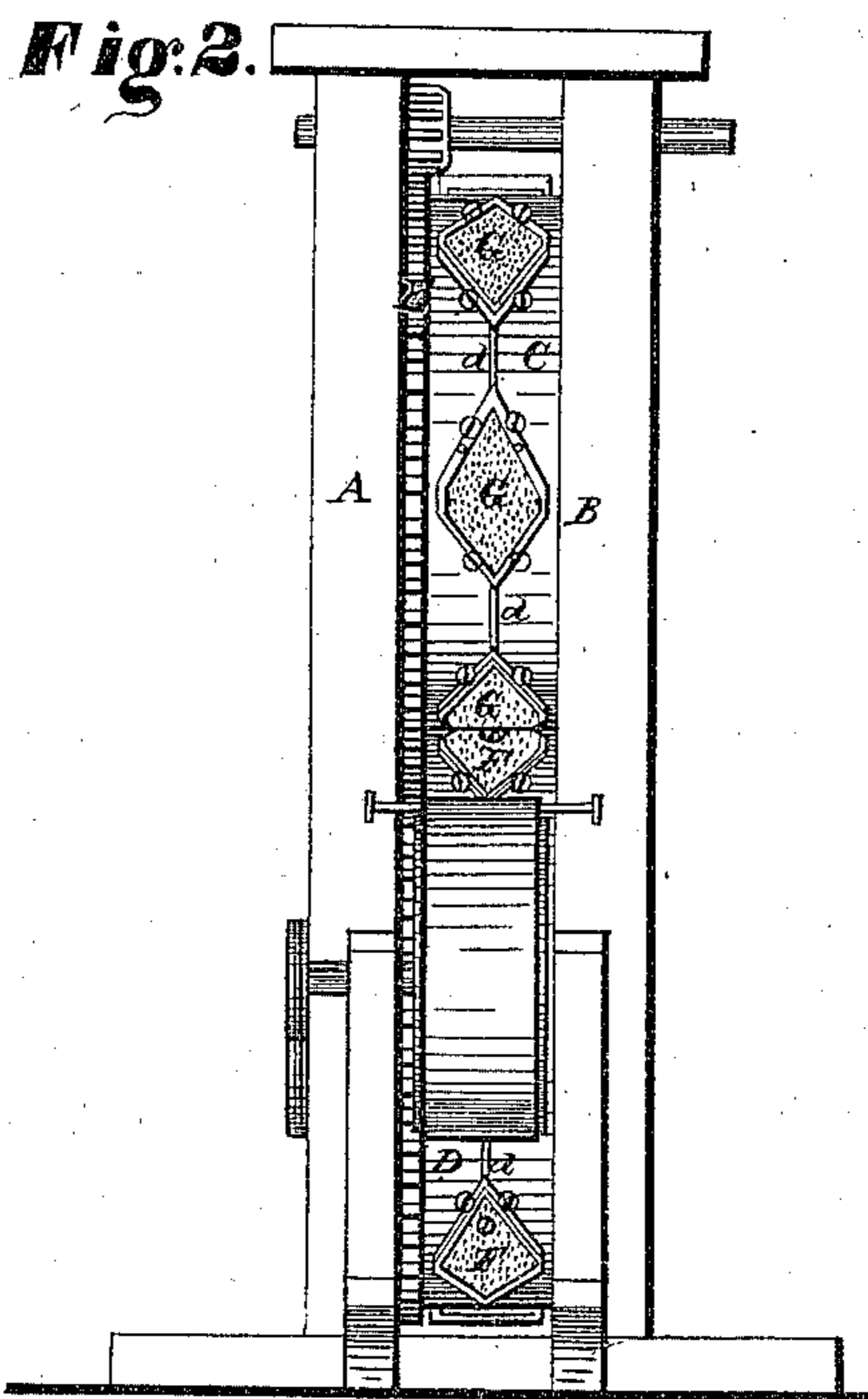
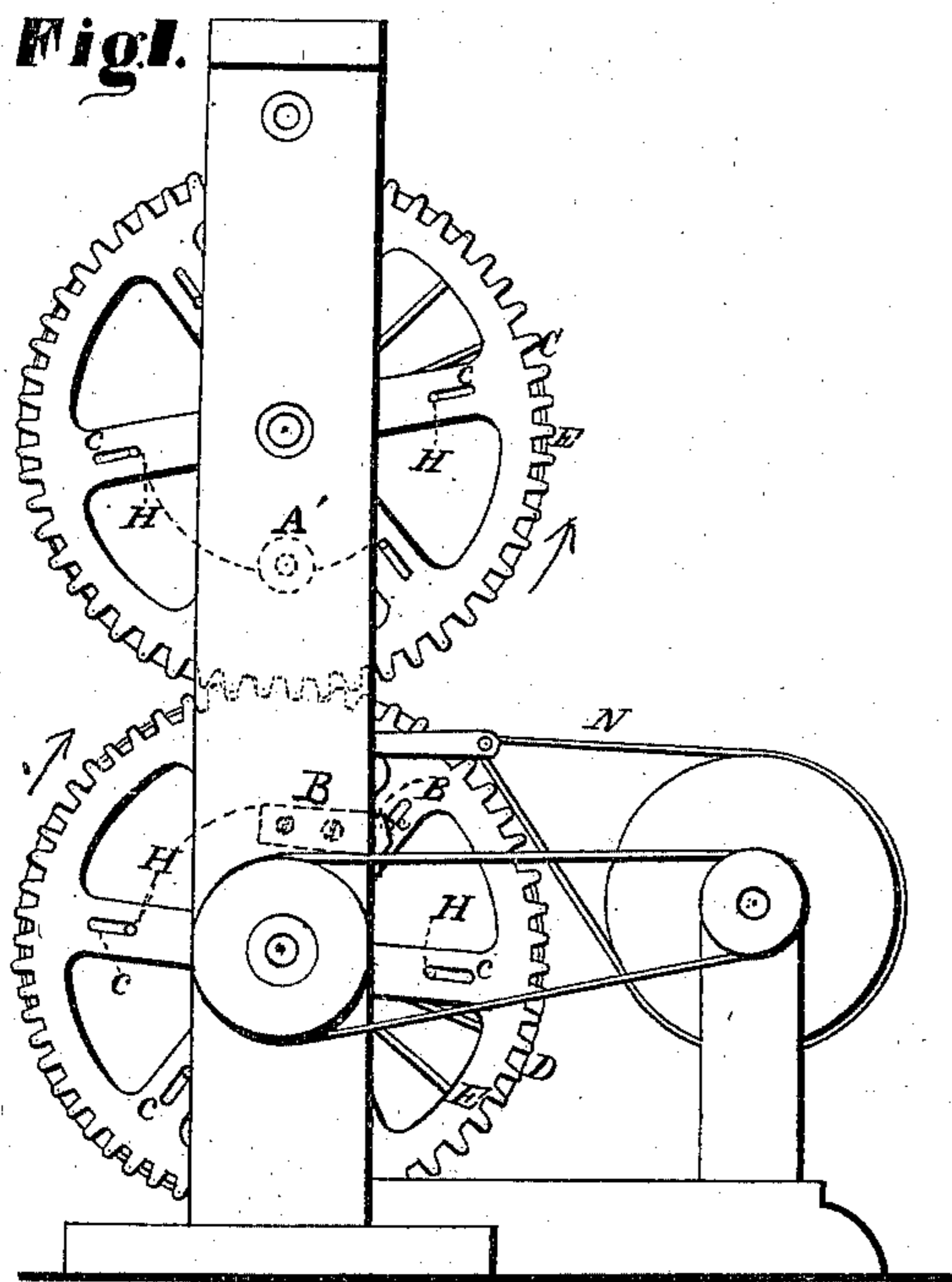


C. J. MERRILL.  
Tile-Machines.

No. 142,576.

Patented September 9, 1873.



**Witnesses.**

Bradford Howland  
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**Inventor.**

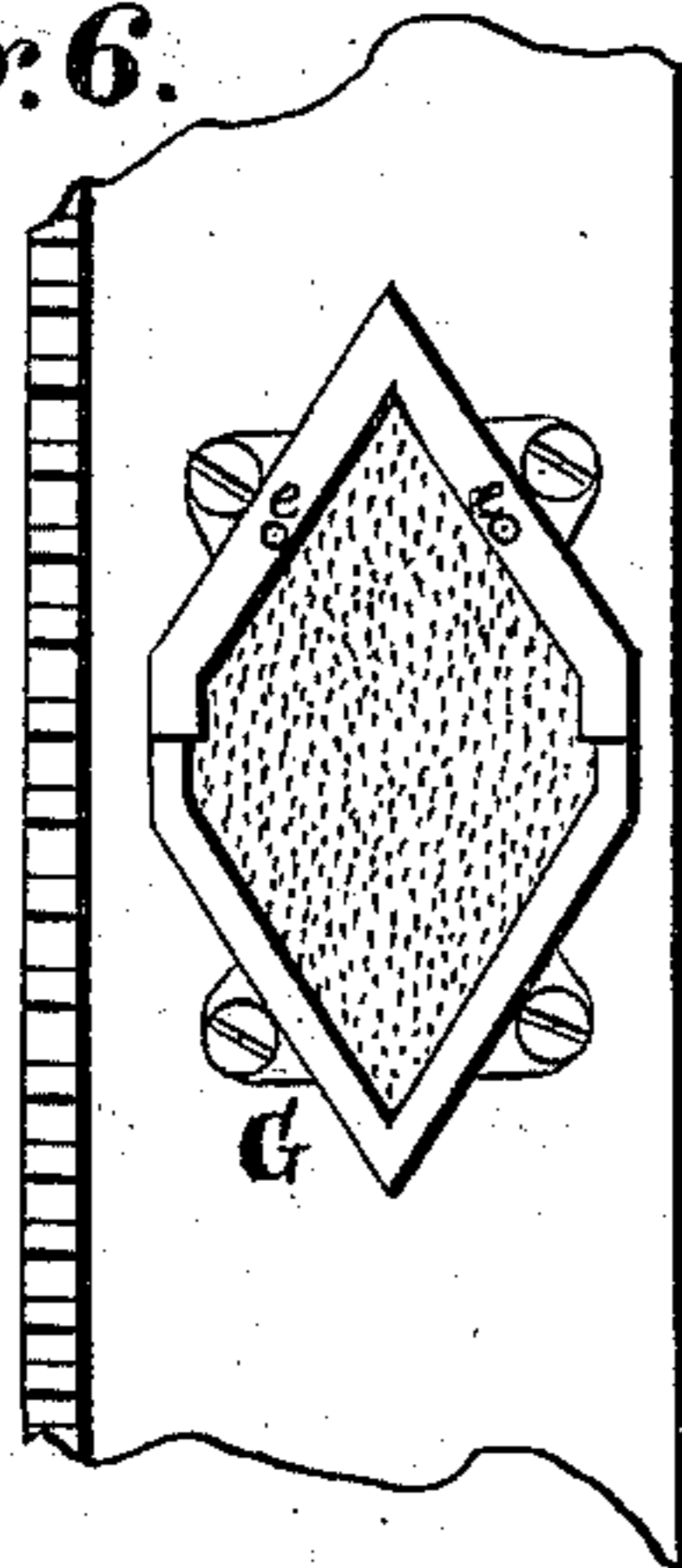
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Tile-Machines.

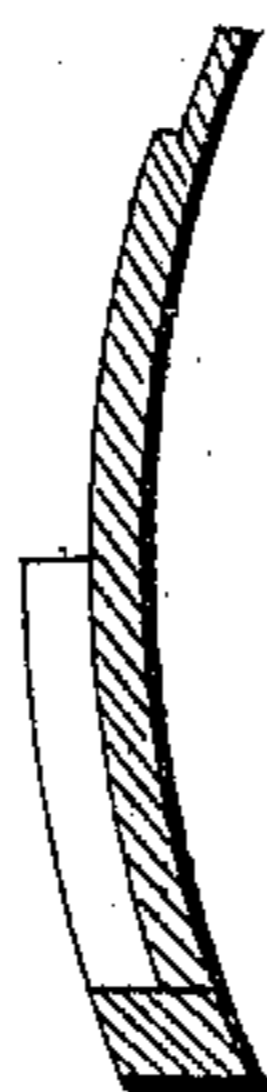
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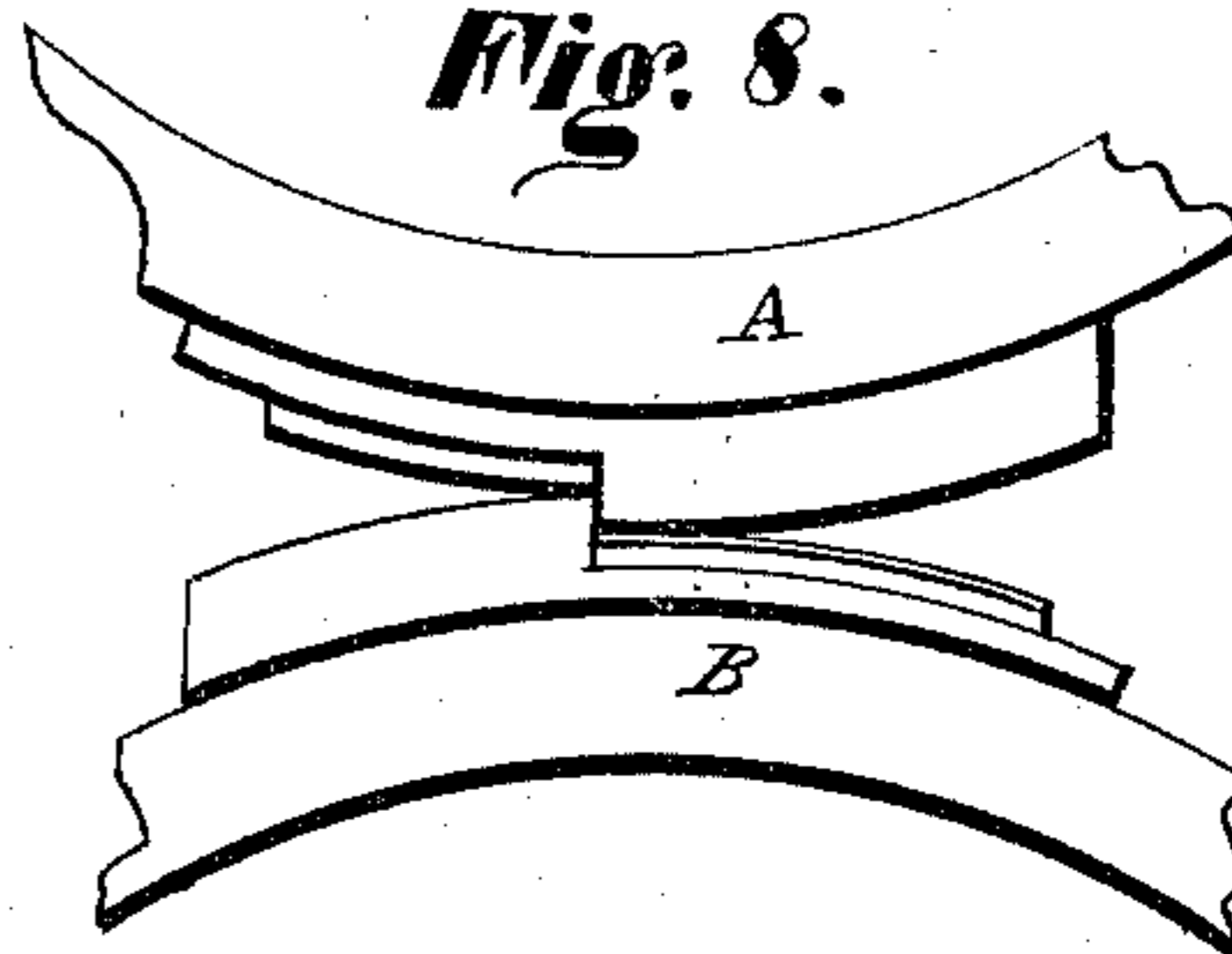
**Fig. 6.**



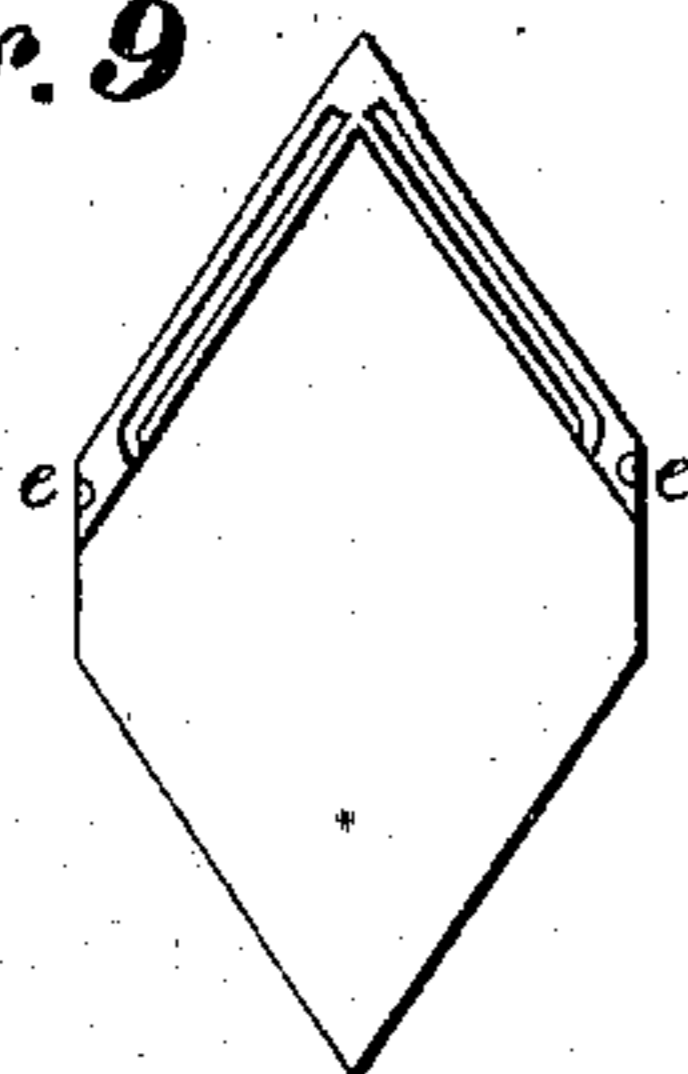
**Fig. 7.**



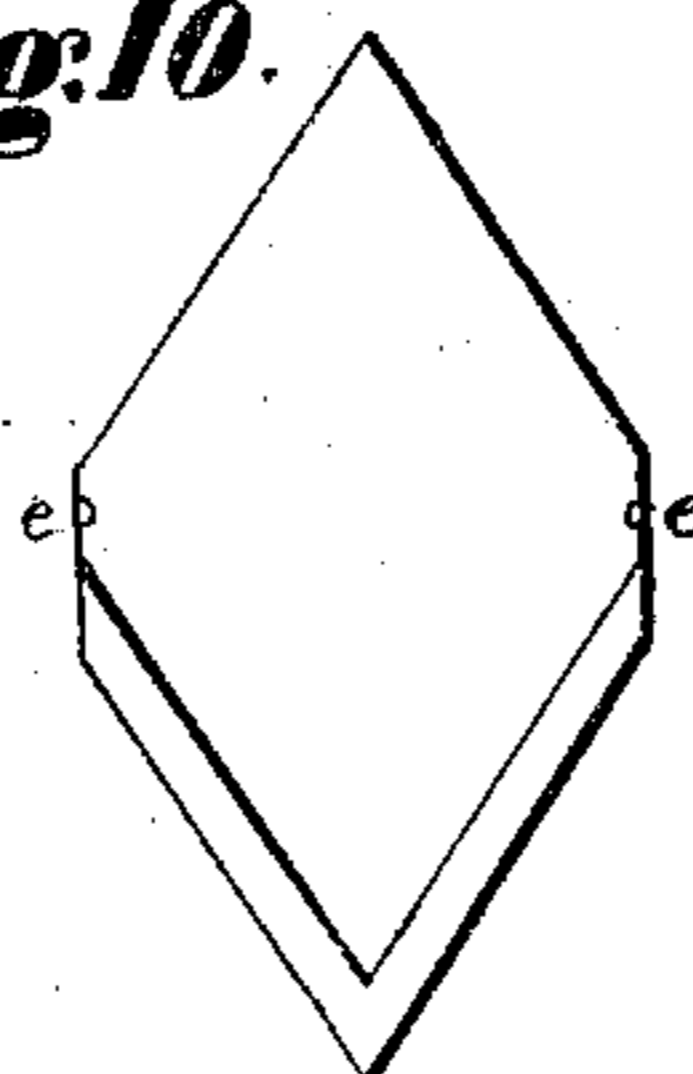
**Fig. 8.**



**Fig. 9.**



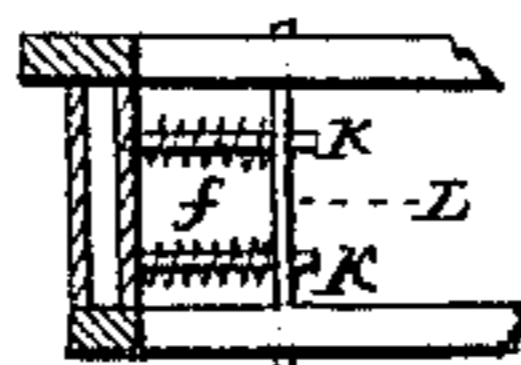
**Fig. 10.**



**Fig. 11.**



**Fig. 12.**



**Witnesses.**

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Atys.

# UNITED STATES PATENT OFFICE.

CALVIN J. MERRILL, OF UPPER ALTON, ILLINOIS.

## IMPROVEMENT IN TILE-MACHINES.

Specification forming part of Letters Patent No. 142,576, dated September 9, 1873; application filed August 4, 1873.

*To all whom it may concern:*

Be it known that I, CALVIN J. MERRILL, of Upper Alton, in the county of Madison and State of Illinois, have invented a certain new and Improved Tile-Machine; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings making part of the same.

Figure 1 is a side elevation of the machine. Fig. 2 is an end elevation. Fig. 3 is a plan view. Fig. 4 is a detached transverse section. Fig. 5 is a detached vertical section. Figs. 6, 7, and 8, Plate 2, are detached sections. Figs. 9, 10, and 11 are views of a tile made by the machine. Fig. 12 is a detached section.

Like letters of reference refer to like parts in the several views.

The object of this invention is to make roofing-tiles, window-sills, and caps, and other similar articles of clay, by means of an arrangement and combination of devices, whereby the clay is pressed into molds of the different articles specified.

The construction and operation of the various parts of the machine are as follows:

In the drawing, Fig. 2, A B represent a pair of standards, in which are journaled two wheels, C D, which engage each other by the gearing E. Under each of the dies or molds is formed a steam-chamber, O, Fig. 5, into which steam is admitted through the pipe b. One end of said pipe terminates in one of said chambers, whereas the opposite end terminates in the hollow shaft G' of the wheel, into which steam is received from the boiler. The several steam-chambers are connected to each other, for the transmission of steam by a pipe, d, Figs. 2 and 3, extending around the wheel from one chamber to another. The purpose of said chamber will presently be shown. In the faces of the wheels referred to are arranged a series of dies or molds, F G, which are so constructed as to give the desired shape to the article to be made, which, in this machine, is a roofing-tile. Detached views thereof are shown in Figs. 9 and 10, which gives a view of both sides of the tile. The upper and lower dies are constructed substantially alike, differing only in that in the bottom of each of the lower dies is placed a metallic plate or tongue, I', of the same form

as the inside of the die, and upon which the clay is placed and prepared, and whereby the pressed article is forced out from the die by raising said tongue, as will presently be shown. The tongue referred to is raised out of the lower die by a rod, d, Fig. 5, one end of which is secured to the tongue, whereas the opposite end is secured to a bar, H, Fig. 4. The two ends of said bar project through slots c in the arms I of the wheel, in which said bars slide for operating the tongues of the dies. J, Fig. 5, is a spring surrounding the rod d referred to, the purpose of which is to retain the tongue within the die. Fig. 6 represents an enlarged detached view of one of the dies, the face of which and also the face of the tongue are etched or otherwise made with a roughened surface, so as to confine small portions of air between said surfaces and the clay, which air, when the pressure is removed, will expand and raise or loosen the clay from said roughened surfaces. Fig. 8 represents detached sections of the upper and lower dies, showing their relation to each other pressing the clay between them; and Fig. 7 shows a longitudinal section of a die, all of which shows the form of the dies for making the tiles, shown in Figs. 9 and 10. In the upper wheel, C, there is a similar arrangement as that in the lower wheel for ejecting the tile, the purpose of which is to punch the nail-holes e in the sides of the tile, and which arrangement consists of the two punches K, Fig. 12, attached to the sliding head or bar D, the ends of which project through slots in the arms of the wheel. The punches are projected through the rim of the wheel into the sides of the dies at the proper place and time to make the nail-holes, as will presently be shown.

The practical operation of the above-described machine is as follows: The wheels are made to revolve in direction of the arrows; a certain portion of clay is placed in the dies, which, by the corresponding curvature of their faces, the dies begin to press the clay at one corner or end by a rolling motion, thereby pressing and packing the clay into all parts of the dies, and forcing the surplus clay out at the opposite corner. While the clay is thus being pressed the nail-holes are punched, the punches being forced out by the head or bar

L coming in contact at the proper time with cam A', Fig. 1, indicated by the dotted lines, attached to the inside of the standards, one on each side of the wheel, over which the projecting ends of the head slide, thereby forcing out the punches into the dies, and perforating the clay. The moment that the holes are punched the punches are withdrawn into the wheel by the springs f. At this time the tongue at the bottom of the lower die is forced out by the projecting ends of the head H coming in contact with side cams B, Fig. 1, thereby forcing outward the rod d, which so far pushes out the tongue as to allow the end of the tile thereon to fall upon the endless apron N, Fig. 1, whereby it is moved away. The use of steam in connection with the dies is for the purpose of heating them to relieve the clay from the dies.

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

1. In tile-machines, in the wheel C, the combination of a steam-chamber, a, tube b, and a hollow shaft, G', and the dies G, substantially as and for the purpose set forth.
2. The tongue I', rod d, bar H, in combination with the die G and cam B, substantially as and for the purpose set forth.
3. In a wheel carrying molds or dies, the combination of a hollow cylinder-shaft and connecting-pipes and chambers for heating such molds or dies, substantially as and for the purpose set forth.

CALVIN J. MERRILL.

Witnesses:

W. H. BURRIDGE,  
E. HESSENMUELLER.