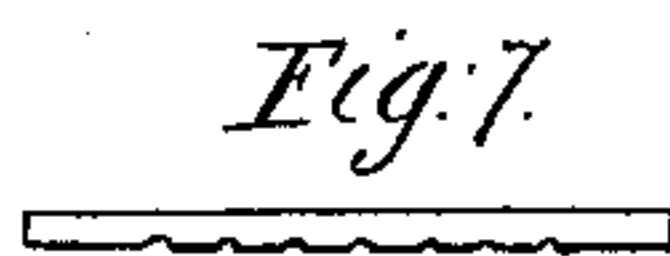
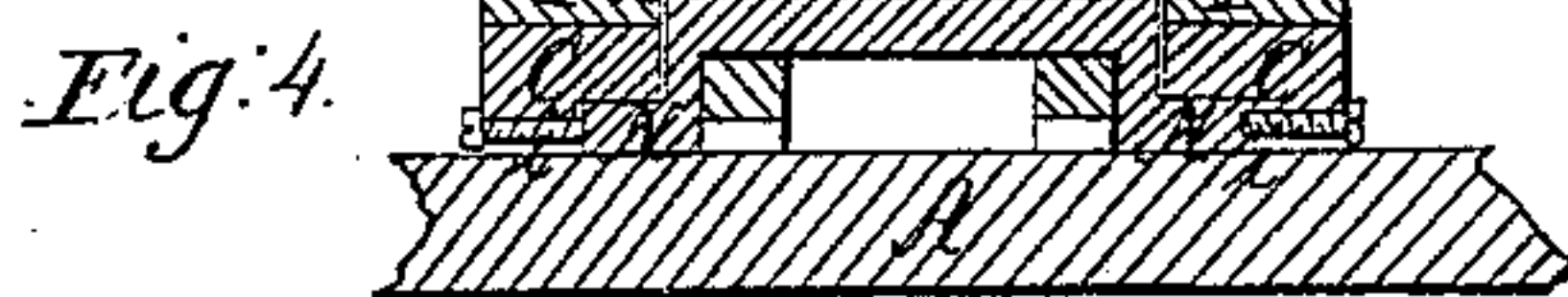
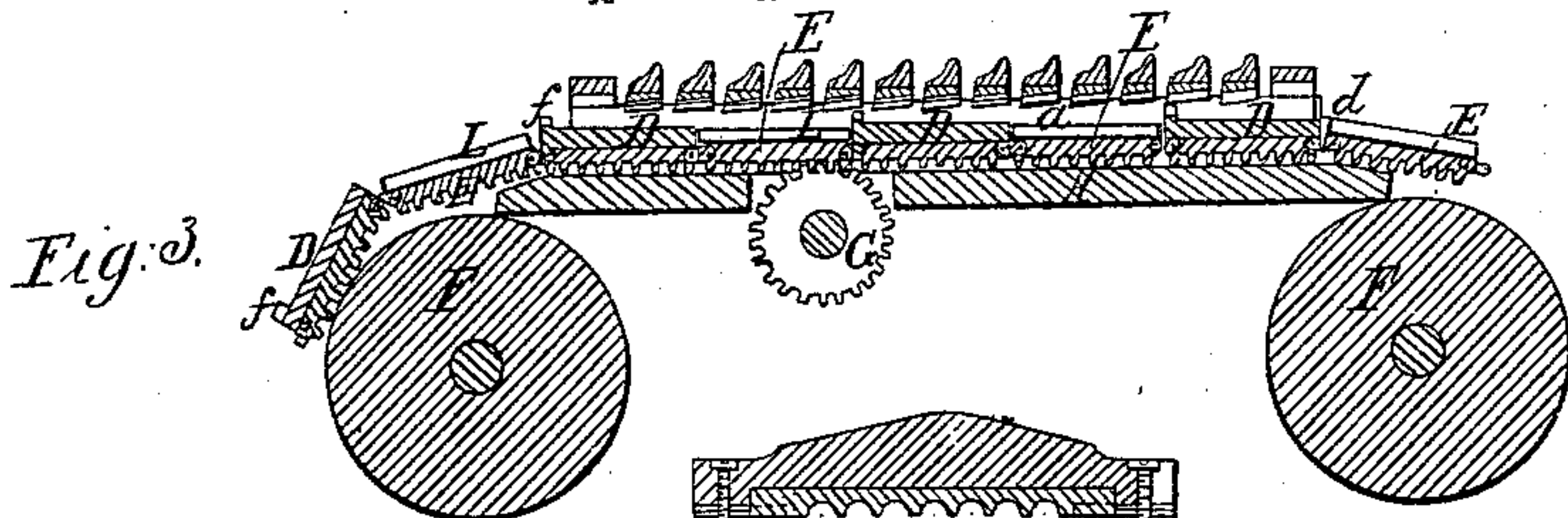
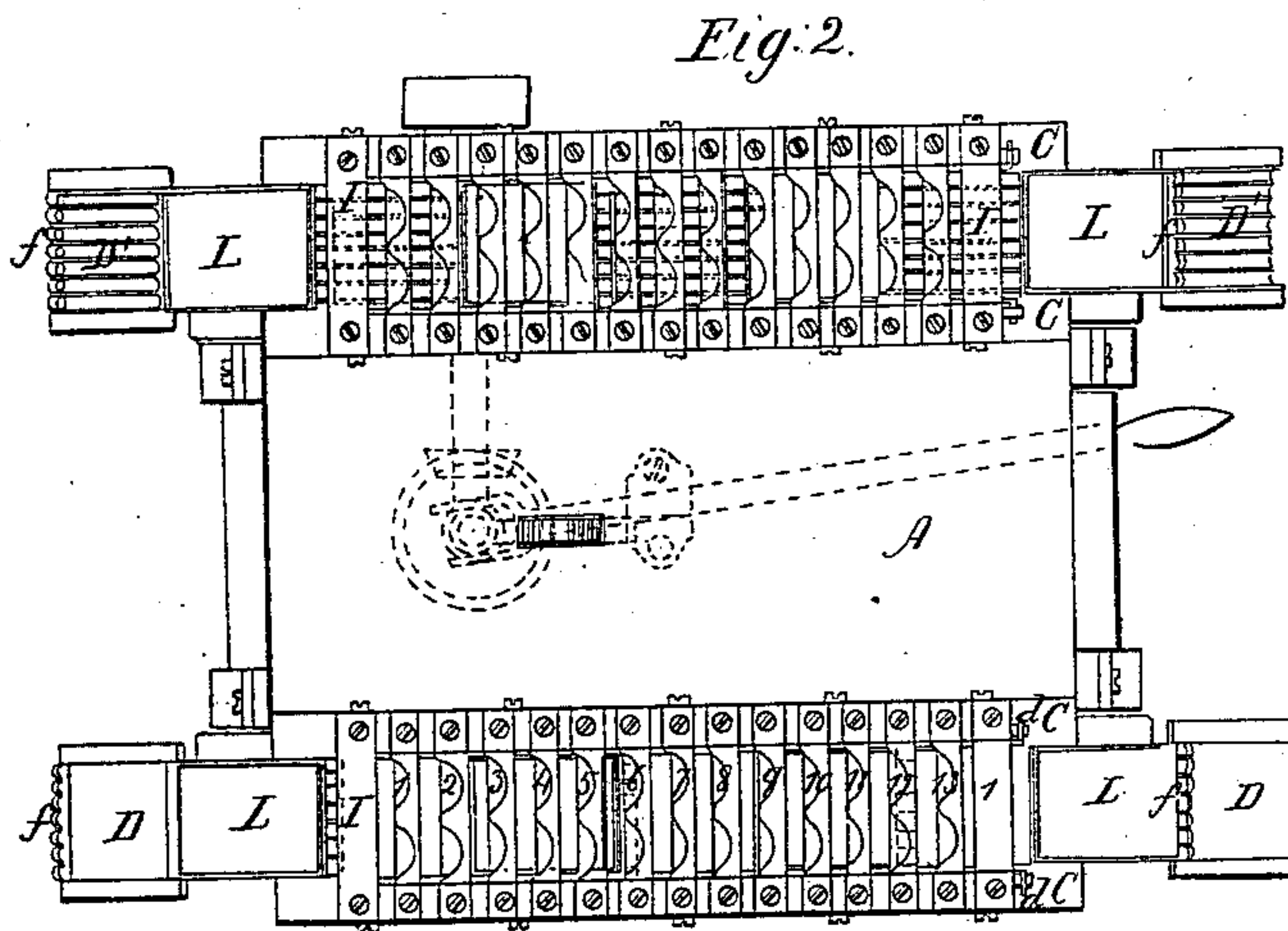
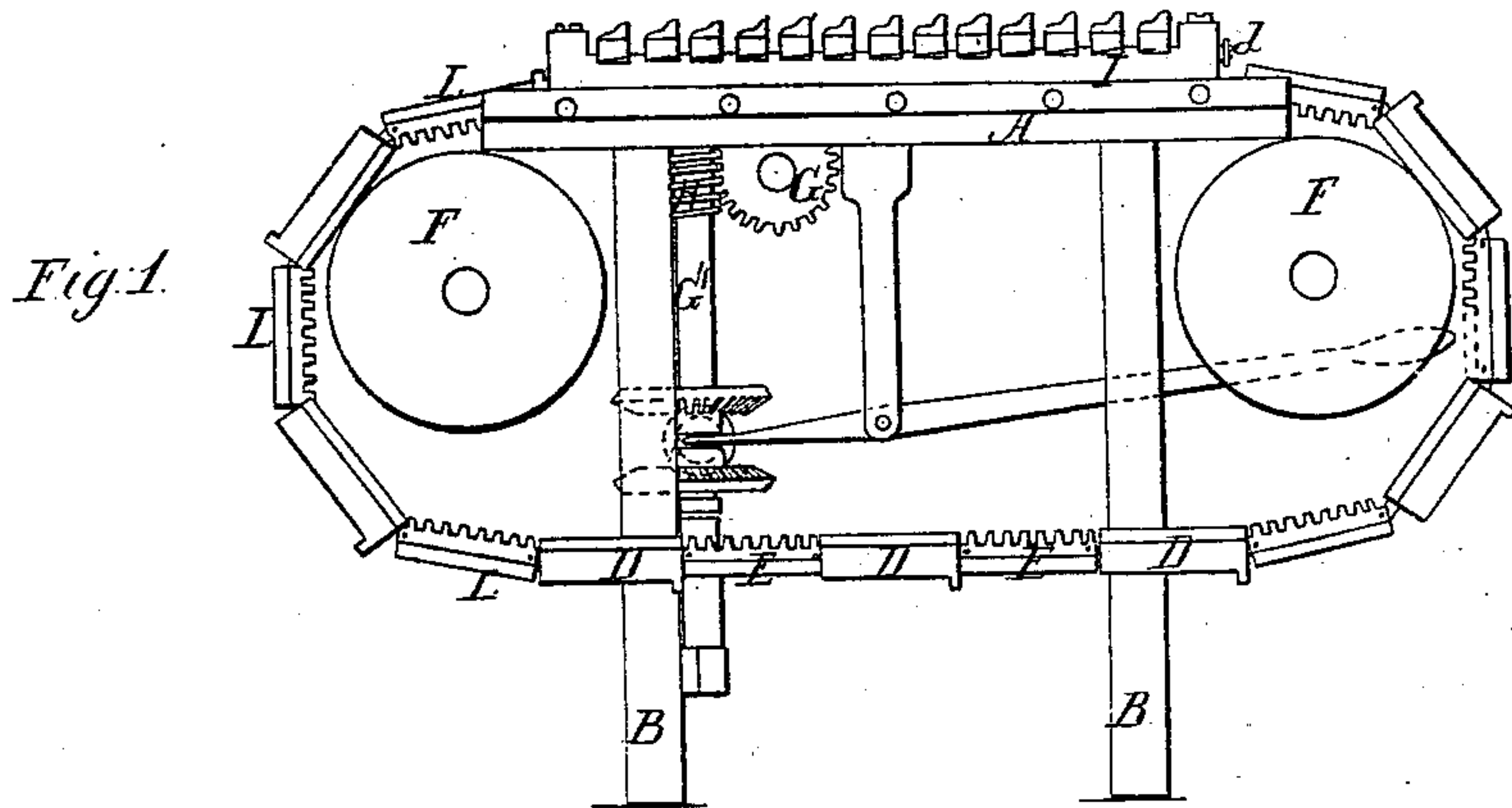


D. R. Satterlee.
Slate Pencil Mach.

N^o 94,136.

Patented Aug. 24. 1869.



Witnesses;
John K. Shumway
A. J. Libbitz

Inventor;
D. R. Satterlee
 Inventor
 By his Attorney
Mr. E. Earl

United States Patent Office.

D. R. SATTERLEE, OF NEW HAVEN, CONNECTICUT.

Letters Patent No. 94,136, dated August 24, 1869.

IMPROVED MACHINE FOR MAKING SLATE-PENCILS.

The Schedule referred to, in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, D. R. SATTERLEE, of New Haven, in the county of New Haven, and State of Connecticut, have invented a new Improvement in Machine for Making Slate-Pencils; and I do hereby declare the following, when taken in connection with the accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view.

Figure 2, a top view.

Figure 3, a central section through the cutters.

Figure 4, a transverse section.

Figure 5, a diagram, showing the arrangement of the cutters.

Figure 6, the last cutter.

Figure 7, the first cutter.

This invention relates to an improvement in machines for making slate-pencils, that is to say, machines which cut the pencils from a slab of slate or other material from which pencils for similar use are made.

Heretofore, in the cutting of pencils, the cutter has been formed of a semicircle, being half the size of the pencil to be cut, that is to say, as seen in fig. 6. Therefore, commencing to cut at the point of the cutter, the slate is by the first cut but barely marked, each successive cut increasing in the surface worked upon until the last cut, which takes the full surface of the cutter; hence the least strain upon the slab is at the commencement of the cut, when the slab is the strongest, the strain upon the slab increasing as the cuts progress, and at the greatest strain when the slab is weakest; hence in thus cutting pencils, very many are broken.

The object of my invention is to overcome this difficulty; and

It consists in the construction and arrangement of the cutters, so that the largest amount of material is cut away at the first cut, and the least at the last cut.

To enable others skilled in the art to construct and use my improvement, I will proceed to describe the same, as illustrated in the accompanying drawings.

A is the bed of the machine, supported upon legs B or otherwise, and upon the bed, guides C are arranged, longitudinally, for conducting the carriage which moves the slab, the said carriage being a succession of slab-holders, D, (see fig. 3,) connected together by links E.

The links and holders form an endless carriage, as seen in fig. 1, passing over pulleys F at each end of the machine, and the said endless carriage provided with a rack of teeth, so as to be driven by the application of power thereto in any convenient manner,

here represented as through a pinion, G, by power applied to a vertical shaft, G', with a worm, H, working in the pinion G, as seen in fig. 1.

Power is coupled to the shaft, so as to connect or disconnect or reverse the power, as may be desired.

Over each carriage, cutter-frames or holders I are arranged, the said cutter-holders being the frame extending along the two sides of the carriage, and connected together over the top of the carriage.

Upon the said cutter-holders, the several cutters, 1, 2, 3, 4, &c., more or less in number, are secured.

The cutters are of the form seen in fig. 5, slightly inclined upon the under surface, so as to present only the point as the cutting-edge, and they are formed as follows:

Supposing the cutters to be twelve in number, as seen in fig. 5, the whole depth or half of the pencil is made in twelve cuts. I therefore, form the cutters in accordance with the diagram seen in fig. 8, enlarged for better illustration.

The first cutter, as seen in fig. 7, cuts to the line 1 in fig. 8, the next cutter to the line 2, and so on each successive cutter, until the last, shown at 12, when half the pencil is cut.

It will therefore be seen that the first cutter cuts over the broadest surface, each successive cutter diminishing in the extent of cut until the last, which is merely a mark. After one side has been cut, the slab is reversed, and the other side is cut in like manner. Therefore, as the strain upon the slab is continually diminishing as the pencil approaches completion, and the slab becomes weakened, the liability to break is reduced, and the pencils produced by such cutters are fully equal, if not superior to those produced by the cutters as heretofore constructed.

As the cutters are increased or diminished in number, the cut is respectively decreased and increased accordingly, and in cutters thus formed, the point only bears upon the slab, on account of the inclination, as seen in fig. 5, and the cutters to be sharpened, have only to be ground across the front edge. This would, however, if the cutters were fixed or unadjustable, gradually raise the cutting-point. It is, therefore, important that the cutters be adjusted always to the same level. To this end, upon each side of the cutter-holders, and under the cutters, I arrange a longitudinal bar, a, with inclined seats for each knife, as seen in fig. 3, the lowest point on the said slide being the required elevation for the cutters.

The bar a is adjustable longitudinally by a screw, d, at the end or otherwise, so that the bar may be moved longitudinally. Therefore, when the cutters have been ground or sharpened, they are set upon their seat upon the frame, and the bar adjusted so as to bring the edge

of each cutter to the proper position. Then the cutters are bound down upon their seat, and the proper position for the cutting-edge is always insured.

One great advantage of this adjustment and securing the cutters to the detachable holder I, is this, that as by use the cutters are soon dulled, the whole series may be taken from the machine, and having a duplicate series, a second series of cutters sharpened and set, may be put on, to replace the first set dulled and removed, to work while the first are being sharpened and reset. Thus the machine is hindered but a very short time in consequence of the dulling of the cutters.

One great difficulty in the manufacture of pencils arises from the dust caused by cutting. This difficulty I remove by placing in the rear of each holder, on the links E, a pan, L, which receives the dust, or cutting from the slab as it passes in advance of the pan, and these several pans, carrying the dust through several machines, deposit the dust below the machine, and without in any way interfering with the operation of the machine.

It may be advisable, and I prefer, in order to make the joint between the holders and pan perfectly tight, to place between each holder and its pan a piece of flexible or elastic material, so as to perfectly close the joint, or may be a piece of flexible or elastic material, fixed to one holder, extending beneath the pan to the next holder.

Each of the holders, it will be observed, is provided with an abutment, *f*, against which the slab rests, and this is all that is required for the holding of the slab.

The holders for the first cutting are made flat upon their upper surface, as denoted at D, in fig. 2, but for the second cut the holders are grooved as denoted at D', fig. 2, so that each pencil lies in its respective groove.

The cutters being alike for both sides, the first se-

ries of cutters cuts half through the slab, and half forms the pencil. The last cutter of the last series separates the pencils from each other, and delivers them from the machine complete.

It is essential for perfection of the work, that the adjustment of the carriage be such that no lateral or vertical movement of the carriage or holders can occur during the process of cutting. I, therefore, form the guides C so as to lap on over a flange, N, of the holder, as seen in fig. 4, and, fitting closely, prevents any vertical movement. Then, upon each outside of each of the flanges N, I arrange a gib, *i*, adjusted by set-screws, as seen in fig. 4, so that any lateral movement is prevented.

Having fully described my invention,

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

1. A series of cutters, constructed as described, so that the largest quantity of material is first cut, and diminished at each successive cut, substantially in the manner and for the purpose set forth.

2. The adjusting bar *a*, arranged in the cutter-holder, for the adjustment of a whole series of cutters, substantially in the manner described.

3. The combination of the holder I with the series of cutters arranged thereon, when the said holder is constructed so as to remove all the cutters from the machine without detaching them from the holder, substantially as and for the purpose specified.

4. In combination with a carriage of several holders D or D', the dust-carrying pans L, in the manner substantially as set forth.

D. R. SATTERLEE.

Witnesses:

JOHN E. EARLE,
A. J. TIBBITS.