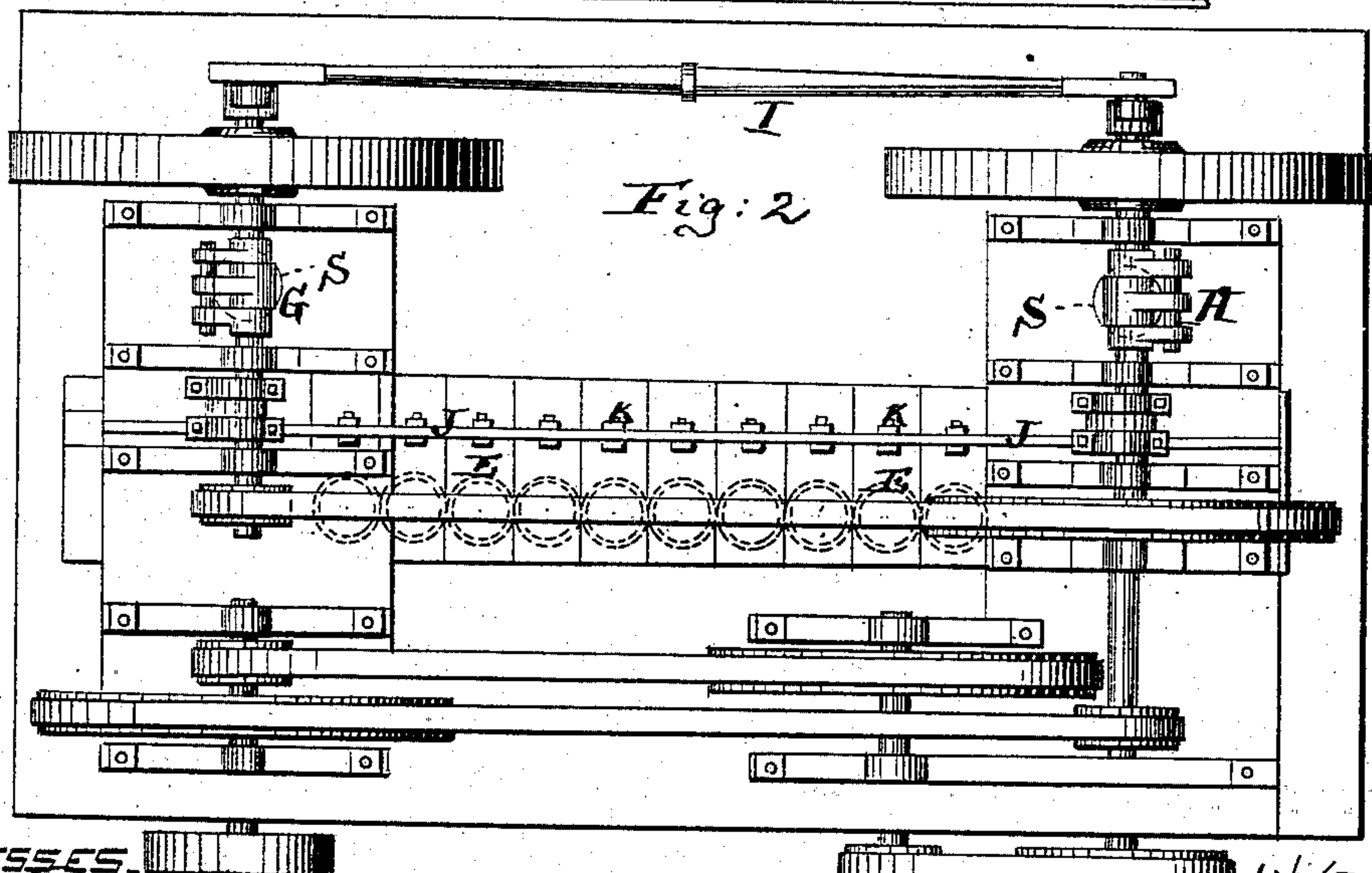
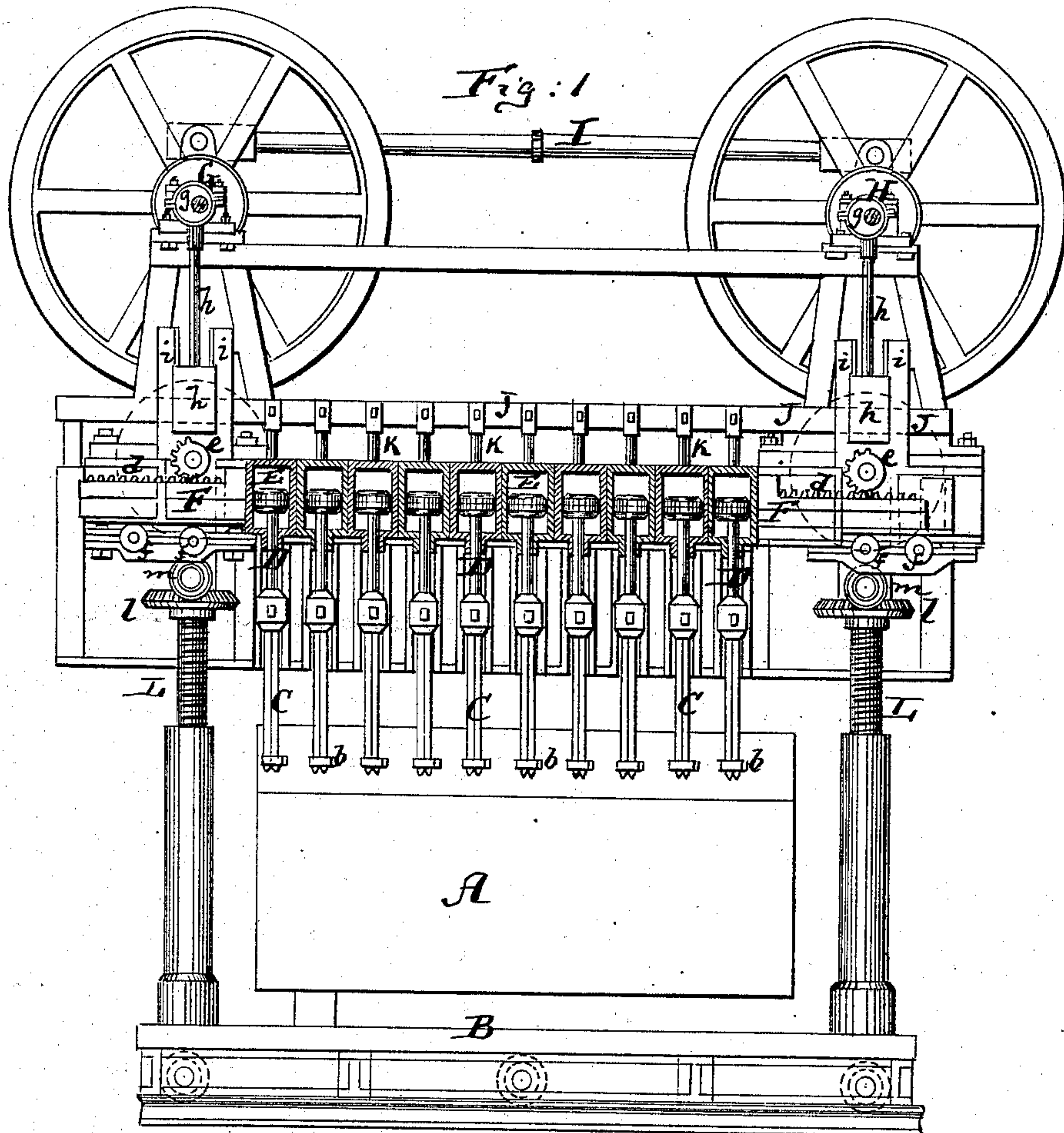


(No Model.)

2 Sheets—Sheet 1.

G. J. SCHMIDT.
Machine for Working Natural Stone.
No. 239,854. Patented April 5, 1881.



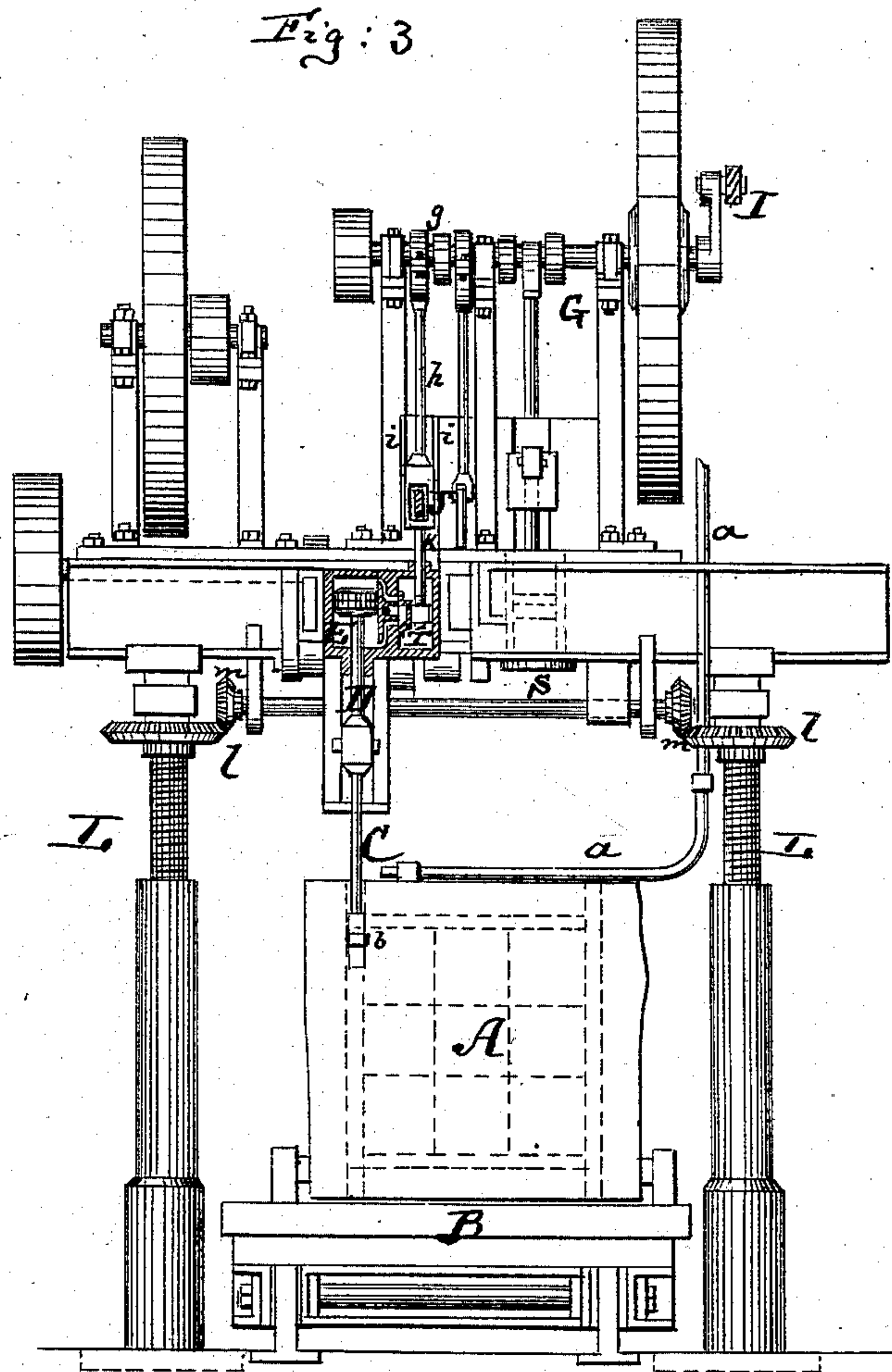
WITNESSES.
H. F. Parker.
John C. Turnbridge.

INVENTOR.
Gottlieb Johannes Schmidt
by his attorney
A. B. Briesen

(No Model.)

2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

GOTTLIEB J. SCHMIDT, OF OBER PEILAU, GNADENFREI, PRUSSIA, GERMANY.

MACHINE FOR WORKING NATURAL STONE.

SPECIFICATION forming part of Letters Patent No. 239,854, dated April 5, 1881.

Application filed September 6, 1880. (No model.) Patented in Germany August 13, 1878.

To all whom it may concern:

Be it known that I, GOTTLIEB JOHANNES SCHMIDT, of Ober Peilau, Gnadenfrei, Prussia, German Empire, have invented a Machine for Working Natural Stones, (for which I have received German Patent No. 5,043, for fifteen years, dated August 13, 1878,) of which the following is a specification.

Figure 1 is a front elevation, partly in section, of my improved machine for cutting stone. Fig. 2 is a plan or top view of the same; and Fig. 3, an end view, partly in section, of the same.

The object of this invention is to produce a machine for cutting large rocks or blocks of stone into shape for building purposes without requiring manual labor to do such work. The machine which I have invented is particularly adapted to cutting stone into slabs for sidewalks, floors, steps, sills, mantels, and into the forms required in the building of walls, arches, gutter-curbs, and the like. At present these stones are cut out of the rough by hand, and much material is wasted in chopping off the pieces necessary to produce the slabs or blocks of the desired form; but by means of my improved machine the block of stone can be subdivided into useful pieces without involving practically any waste.

My invention consists in the new combination of parts hereinafter more fully described.

A, Fig. 3, represents the block of stone to be cut and subdivided. It is placed upon a suitable platform or truck, B, and beneath a series of chisels, C C, which act vertically by reciprocating motion imparted to them by steam-power, and which, in addition to their vertical reciprocating motion, also have a slow horizontal movement imparted to them, so that the several chisels, all of which are placed in a row, as indicated in Fig. 1, will at any one time produce a straight cut and two cut surfaces. By this arrangement the block A can be divided in suitable manner—for example, as indicated by dotted lines in Fig. 3—the block being, of course, turned whenever the direction of the cut is to be changed. Only so much of the material of the stone is lost as is worked into dust by the chisels. The hose a, which extends from a water-reservoir, supplies the working ends of the chisels with water, which

water also carries off the dust and mud by the act of cutting. This mud, if preserved, can be used in the manufacture of earthenware goods.

The machine shown in the drawings contains the chisels C C, all set into a straight line; but it is evident that by arranging these chisels in an arc of a circle or otherwise, cylindrical or other shaped cuts may be produced by the machine.

The chisels C C are made of best quadrangular cast-steel, and in order to increase their stability they are arranged in pairs, side by side, as shown in Fig. 1, each pair being secured to the piston-rod D of a small steam-cylinder, E, there being as many steam-cylinders in the line as there are pairs of chisels C C. At a short distance above the cutting ends each pair of chisels is tied together by a steel band, b. The bevels of the cutting ends of each pair of chisels are set at an angle to each other, so as thereby to increase the effect of the reciprocating motion of the chisels upon the stone. Each pair of chisels, as has already been indicated, is operated by its own steam-cylinder, being attached to a separate piston, and therefore each pair of chisels has its own play vertically, so that inequalities in the hardness of the respective chisels, or of parts of the stone operated upon, will not cause the action of one pair of chisels to interfere with the action of any of the other pairs.

The several steam-cylinders E are all of equal size, and are placed at equal distances apart, and are united together into one continuous frame, F, the ends of which have rack-bars d d, as shown in Fig. 1. Into these racks engage pinions e, that are revolved slowly by suitable machinery, and by means of which the entire gang of steam-cylinders and chisels receives a horizontal movement, step by step, sufficient to move one pair of chisels as far as the distance between it and the next pair, so that the continuity of a cut is insured. The frame F, into which the cylinders E are built, rests upon rollers f, which render the above-mentioned horizontal movement practicable.

Two separate steam-cylinders, S, placed below the shafts G H, that are shown in Fig. 2, impart rotary motion to these shafts, which said shafts are united by a rod, I, so that the

movement of one will be precisely equal to that of the other; and these said shafts G H, by suitable eccentrics *g*, reciprocate the two rods *h h*, whose lower enlarged ends move in proper guides *i i*.

Through the lower ends of the two rods *h h* is passed a horizontal bar, J, to which the rods *k k*, that control the positions of the slide-valves T of the cylinders E, are attached. By means of the shafts G H the bar J is reciprocated up and down, thereby moving the slide-valves of the several cylinders E simultaneously, and yet, as the bar J passes through slots of its moving rods, it is capable of horizontal displacement in conjunction with that of the cylinders E, already described, without thereby in the least interfering with its vertical movement.

The frame of that part of the machine which carries the steam-cylinders is supported upon four or more screw-spindles, L L, which carry beveled gear-wheels *l*, into which engage suitable pinions *m*, that are driven by suitable

belts or other contrivances for the purpose of adjusting the position of the cylinders E vertically and allowing a gradual downward feed of the chisels, as well as a proper placing of the machinery with reference to higher or lower blocks of stone A to be cut.

I claim—

In a stone-cutting machine, the combination of the chisels C with the piston-rods D D, cylinders E E, that are connected into a frame, F, with the rack-and-pinion connection *d*, and with the bar J, carrying the slide-valve rods *k k*, said bar J being horizontally movable through the rods *h h*, that impart vertical motion to it, substantially as herein shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GOTTLIEB JOHANNES SCHMIDT.

Witnesses:

PAUL W. ENTSCHER,
FRANK C. ZIMMERMAN.