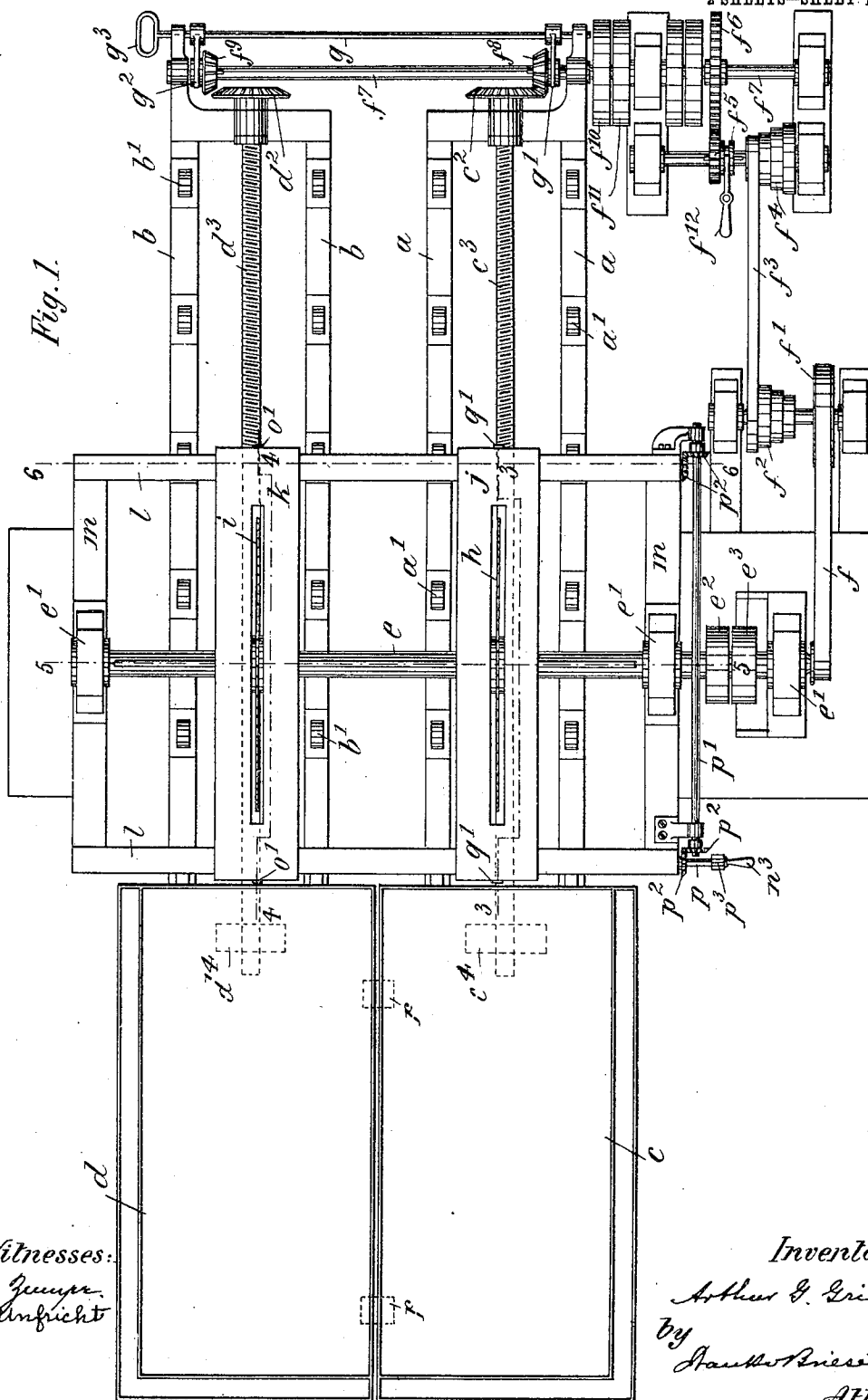


No. 784,561.

PATENTED MAR. 14, 1905.

A. G. GRICE.
SAWING MACHINE.
APPLICATION FILED MAY 23, 1904.

2 SHEETS—SHEET 1.

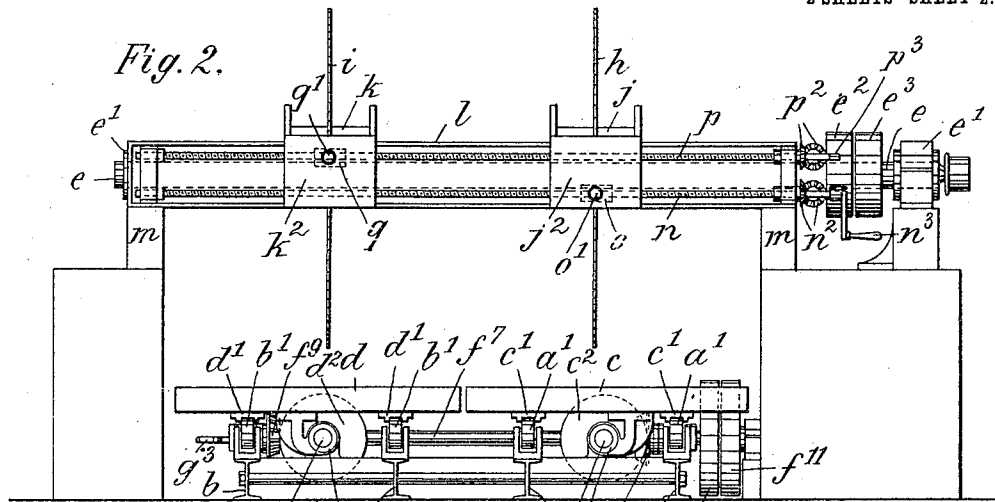
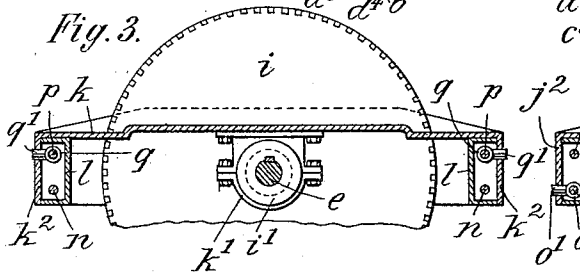
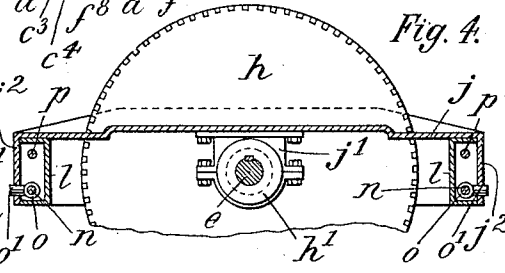
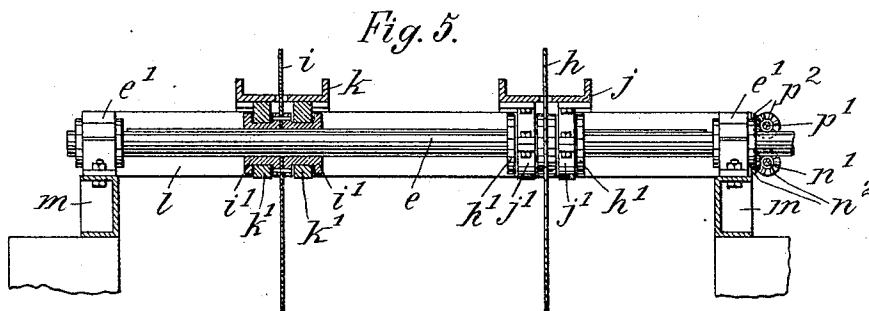
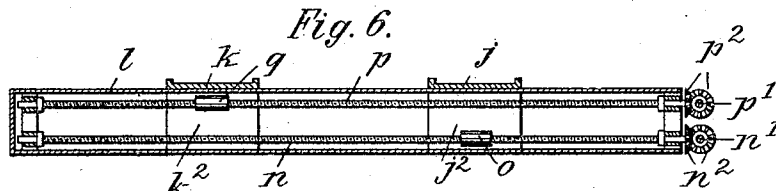
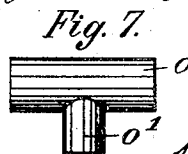


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APPLICATION FILED MAY 23, 1904.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ARTHUR G. GRICE, OF CARNOUSTIE, SCOTLAND

SAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 784,561, dated March 14, 1905.

Application filed May 23, 1904. Serial No. 209,179.

To all whom it may concern:

Be it known that I, ARTHUR G. GRICE, a citizen of Great Britain, residing at Carnoustie, Scotland, have invented new and useful Improvements in Sawing-Machines, of which the following is a specification.

This invention relates to a machine for sawing stones and similar articles by means of rotary diamond saws, which is so constructed that it may be continuously operated and that its output is thereby greatly increased.

In the accompanying drawings, Figure 1 is a plan of a sawing-machine embodying my invention; Fig. 2, a front view thereof; Fig. 3, a cross-section through the rails and slide on line 3 3, Fig. 1; Fig. 4, a similar section on line 4 4, Fig. 1; Fig. 5, a cross-section on line 5 5, Fig. 1, partly broken away; Fig. 6, a similar section on line 6 6, Fig. 1; and Fig. 7, a detail of the feed-nut.

Briefly stated, the machine comprises two work-supporting tables arranged side by side and adapted to be reciprocated beneath the transversely-extending saw-spindle. Upon the spindle are mounted the slidable supports for a pair of saws, of which one is arranged above each table. Thus while one of the tables is reciprocated to effect a cut the other table is at rest at its initial position, and the work supported thereon, as well as its saw, may be adjusted. The result is that a practically continuous operation of the machine is obtained and a double output insured.

The letters *a b* represent two sets of longitudinal beams, carrying guide-pulleys *a' b'*. These pulleys engage, respectively, grooved guide-rails *c' d'*, fitted to the bottom of the work-holding tables *c d*. These tables are placed side by side and are alternately reciprocated in such a manner that while they advance slowly during the sawing operation they are retracted quickly. The means for effecting this result are as follows: The saw-spindle *e* is journaled in bearings *e'* and extends transversely across the path of the tables *c d*. The spindle is provided with fast and loose pulleys *e² e³* and transmits its rotation by belt *f*, pulley *f'*, cone-pulley *f²*, belt *f³*, cone-pulley *f⁴*, and gear-wheels *f⁵ f⁶* to a counter-shaft *f⁷*. Upon shaft *f⁷* are slid-

ably mounted, by feather-and-groove connection, a pair of beveled gear-wheels *f⁸ f⁹*. The wheel *f⁸* is adapted to mesh into a bevel-wheel *e²*, fast on a screw-spindle *e³*, which engages a nut *e⁴* of table *c*. In like manner the wheel *f⁹* is adapted to mesh into a bevel-wheel *d²*, fast on a screw-spindle *d³*, which engages a nut *d⁴* of table *d*. The grooved hubs of the wheels *f⁸ f⁹* are embraced by arms *g' g²* of a shipping-bar *g*, having handle *g³*. By manipulating this bar the wheels *f⁸ d²* are out of gear when the wheels *f⁸ e²* are intergears, and vice versa.

Upon the counter-shaft *f⁷* are mounted the fast and loose pulleys *f¹⁰ f¹¹*, which receive motion from a power-shaft. (Not shown.)

The operation of the device as thus far described is as follows: The shipping-bar *g* is set to intergear wheels *f⁸ e²*, and thus the rotation of saw-spindle *e* will slowly advance table *c* by transmission *f' f² f³ f⁴ f⁵ f⁶*, which rotates counter-shaft *f⁷*. When the table has been advanced to the point desired, the wheel *f⁵*, which is slidably mounted upon its spindle, is thrown out of gear with wheel *f⁶* by handle *f¹²*. The shaft *f⁷* is then rotated in the opposite direction from pulley *f¹⁰* to quickly retract table *c*, after which shaft *f⁷* is arrested and wheel *f⁵* thrown into gear with wheel *f⁶*. The shipping-bar *g* is next manipulated to intergear wheels *f⁹ d²*, when the operation described in relation to table *c* is repeated for table *d*.

h i are a pair of circular saws (preferably diamond saws) which are mounted slidably upon spindle *e*. The saws are fitted between grooved collars *h' h' i' i'*, respectively, to which they are bolted and that slidably engage spindle *e* by groove-and-feather connection. The grooved collars *h' h'* are engaged by a pair of bearings *j'*, depending from a slotted slide *j*, that embraces saw *h*. In like manner the collars *i' i'* are engaged by bearings *k'*, depending from a second slotted slide *k*, that embraces saw *i*. The slides *j k* are guided upon a pair of U-shaped rails *l*, which are parallel to spindle *e* and are mounted upon suitable supports *m*. Flanges *j² k²*, depending from slides *j k*, project over the rails *l* and prevent lateral displacement of the slides.

In order to shift the slides upon the rails l and to consequently set the saws independently of each other, I have devised the following construction:

- 5 Within each rail l is journaled a lower screw-spindle n , said spindles being intergeared by shaft n' and bevel-wheels n'' . Upon spindles n are mounted nuts o , having studs o' , that engage corresponding perforations of flanges j'' . One of the spindles n has a squared arbor for engagement with a handle n^3 , by which both of the spindles n are thus simultaneously rotated to correspondingly shift the slide j , together with its saw k , along spindle e .
- 10 The slide k is operated in like manner and independently of slide j by upper screw-spindles p , also journaled in rails l . The spindles p are intergeared by a shaft p' and bevel-wheels p'' and may be simultaneously rotated by squared arbor p^3 , upon which the handle n^3 can be fitted.

The spindles p carry nuts q , the studs q' of which engage the perforated flanges k^3 to take the slide k along.

- 25 In use the stones, &c., to be cut are placed upon the tables c d , which are alternately reciprocated in the manner described to expose the stones to the action of the saws. While one of the tables is in motion the other table is at rest, and its work-piece may be shifted or its saw may be set to bring the parts in proper position for the next cut. In this way the machine is never allowed to run idle, and a double output is obtained. If desired, the tables c d may be reciprocated in unison to jointly support work-pieces of extra large size when the tables are connected by suitable clasps r , (dotted lines, Fig. 1.)

What I claim is—

- 40 1. In a sawing-machine, the combination of a pair of tables with means for continuously reciprocating one for a desired period, while the other table is at rest and conversely con-

tinuously reciprocating the second table while the first is at rest, a saw-spindle, a pair of saws slidably mounted thereon, and means for independently setting the saws upon the spindle, substantially as specified.

2. In a sawing-machine, the combination of a pair of tables with means for continuously reciprocating one for a desired period, while the other table is at rest and conversely continuously reciprocating the second table while the first is at rest, a saw-spindle, a pair of saws slidably mounted thereon, slides embracing the saws, and means for independently operating the slides, substantially as specified.

3. In a sawing-machine, the combination of a pair of tables with means for reciprocating the same, a saw-spindle, a pair of saws slidably mounted thereon, a pair of slides embracing the saws, nuts engaging the slides, a pair of intergeared screw-spindles engaging the nuts of the first slide, and a second pair of intergeared screw-spindles engaging the nuts of the second slide, substantially as specified.

4. In a sawing-machine, the combination of a pair of tables with means for continuously reciprocating one for a desired period, while the other table is at rest and conversely continuously reciprocating the second table while the first is at rest, a saw-spindle, a pair of saws slidably mounted thereon, a pair of slides embracing the saws, nuts engaging the slides, a pair of intergeared screw-spindles engaging the nuts of the first slide, and a second pair of intergeared screw-spindles engaging the nuts of the second slide, substantially as specified.

Signed by me at New York city, (Manhattan,) New York, this 20th day of May, 1905.

ARTHUR G. GRICE.

Witnesses:

FRANK V. BRIESEN,
WILLIAM SCHULZ.