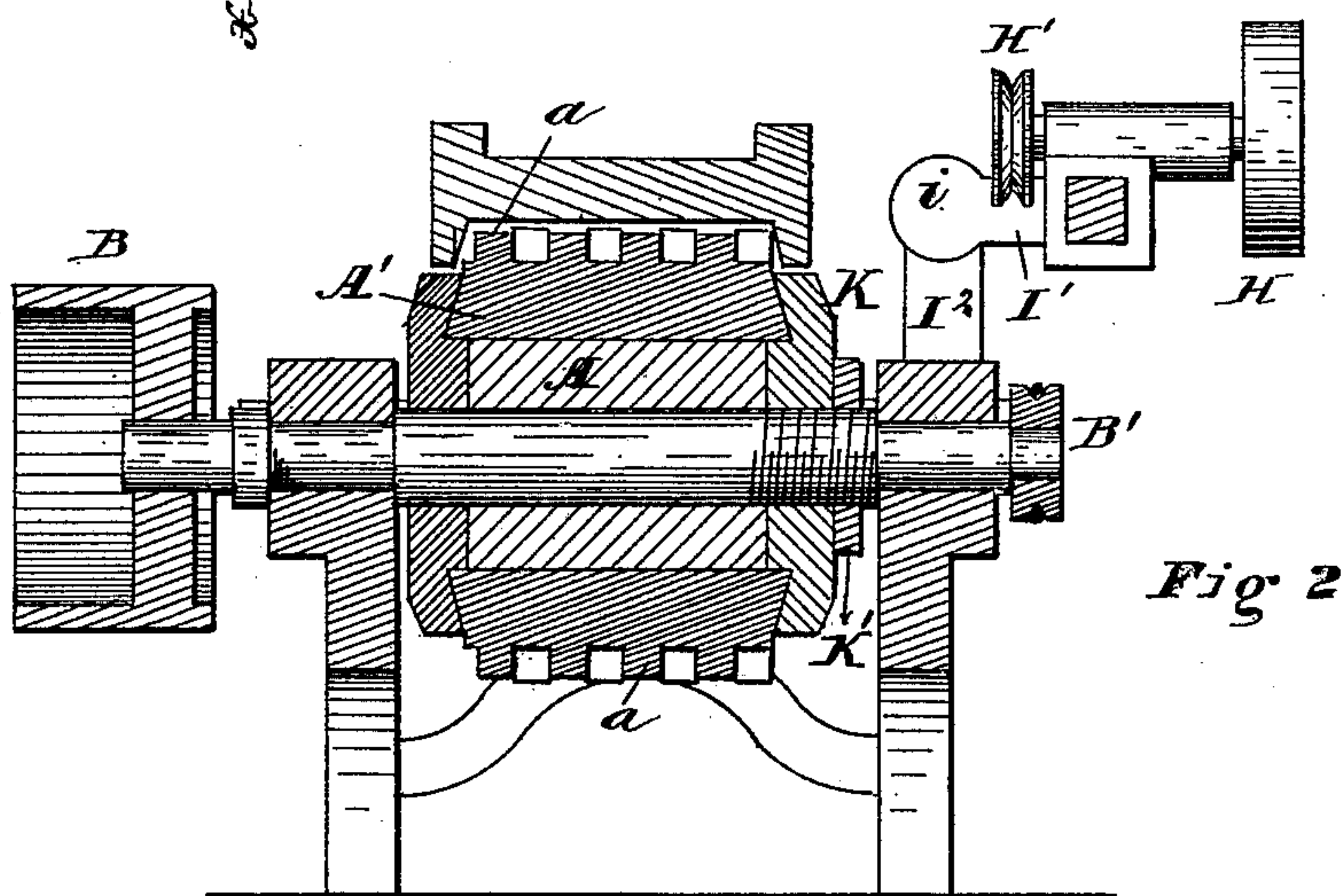
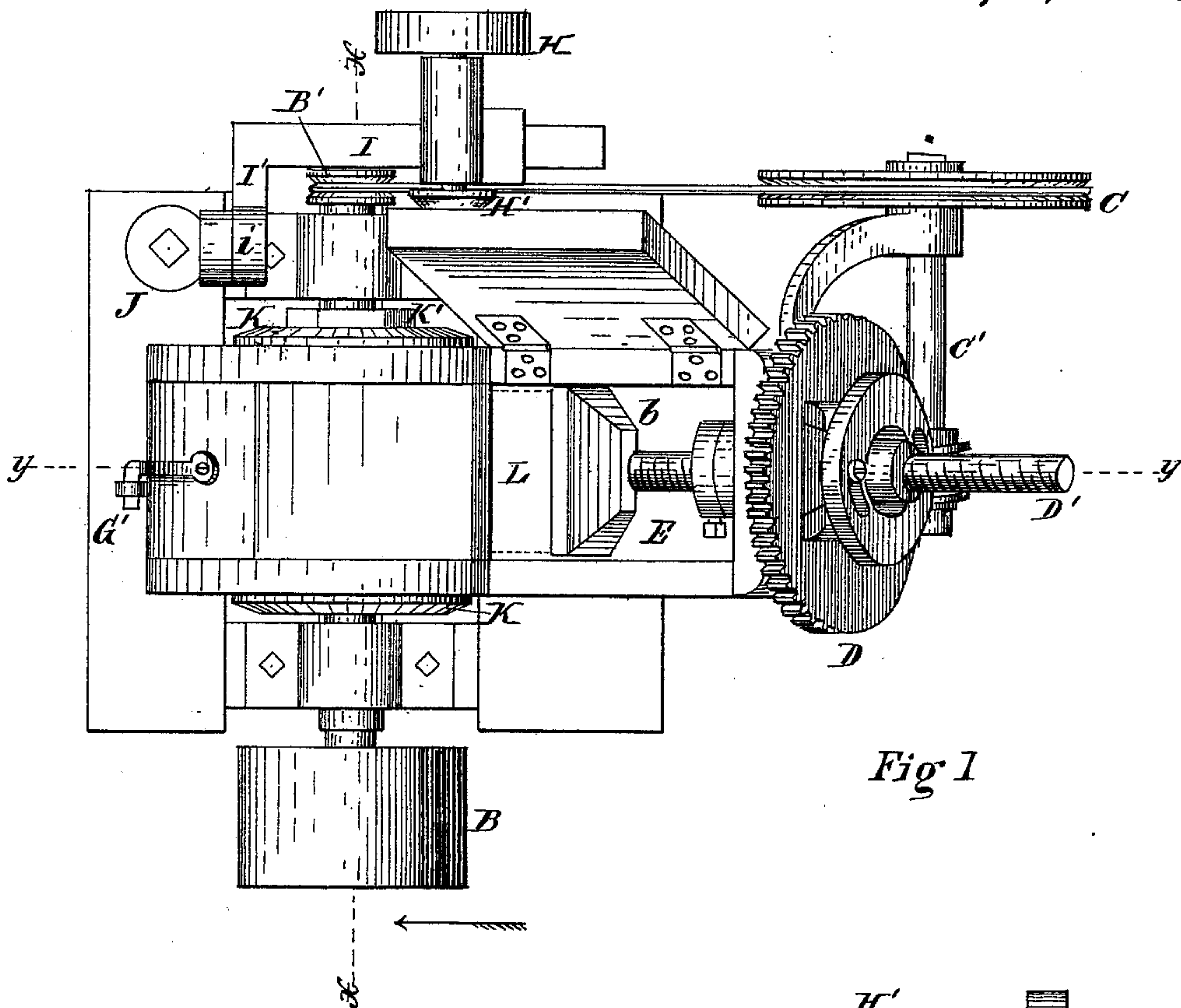


C. W. CLARK.

Machine for Reducing Wood to Pulp.

No. 229,588.

Patented July 6, 1880.



Witnesses

W. C. Cortis
Frederick Goodwin

Inventor

Chester W. Clark

By Offield & Scrub,
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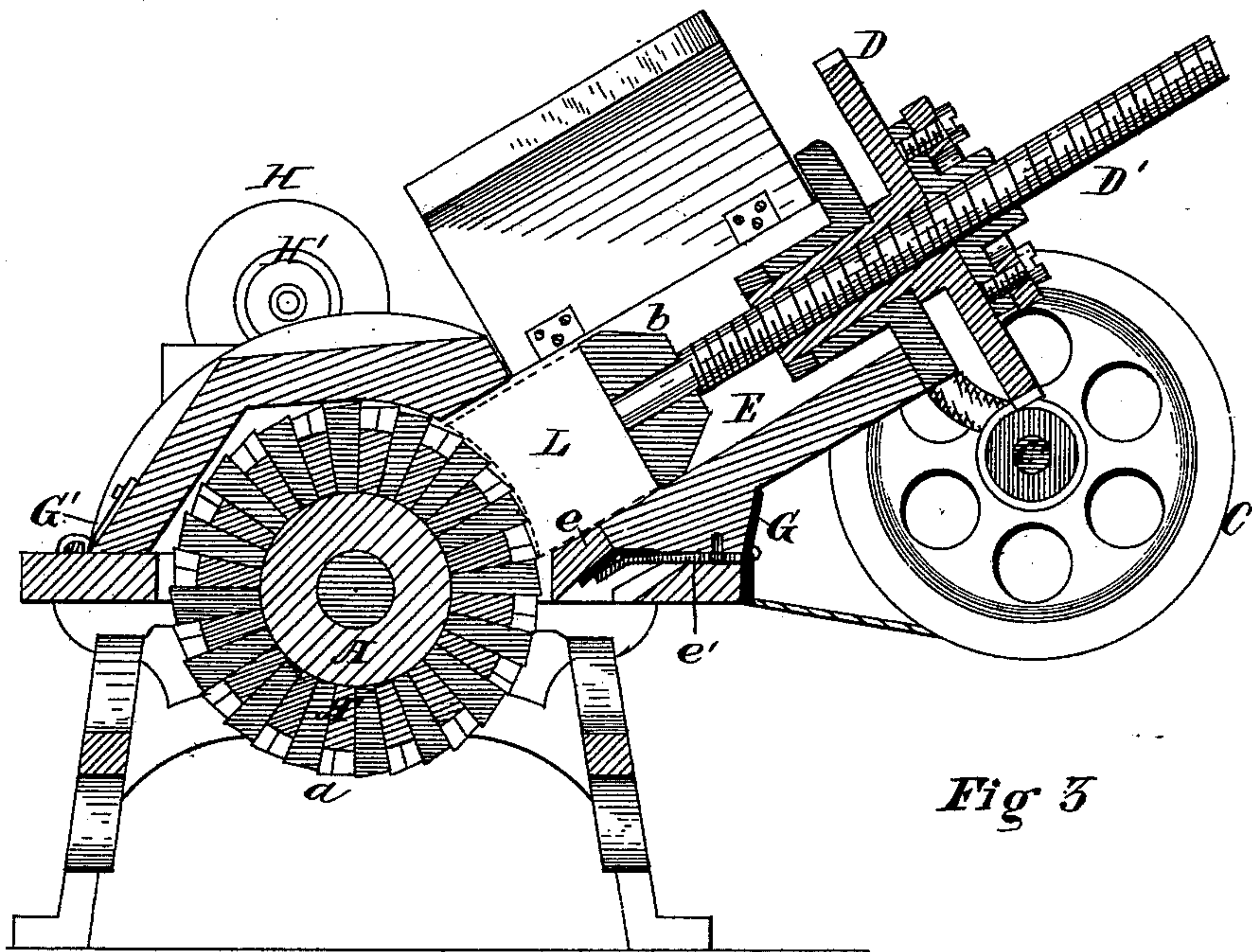


Fig 3

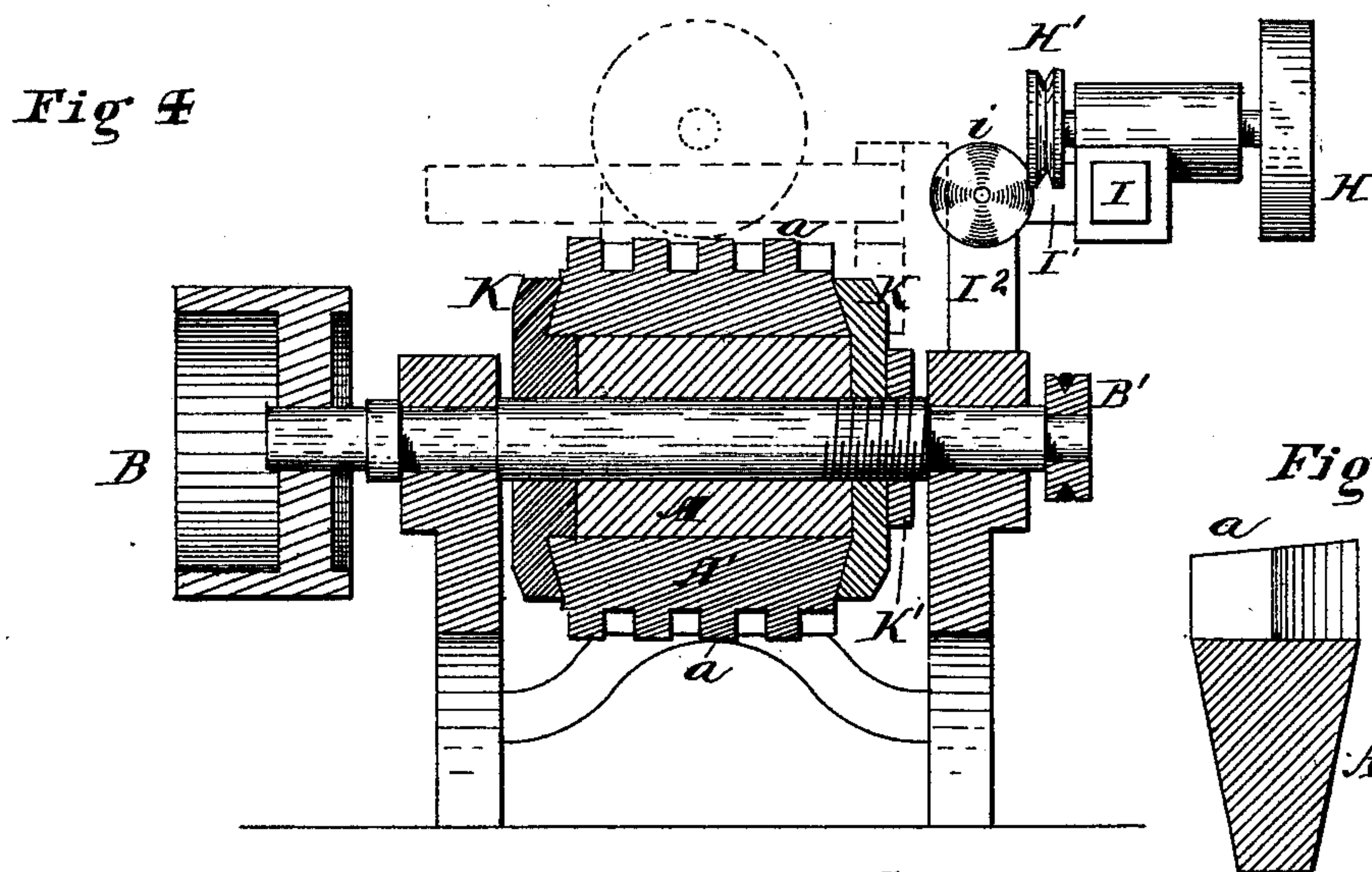


Fig 4

Fig 6

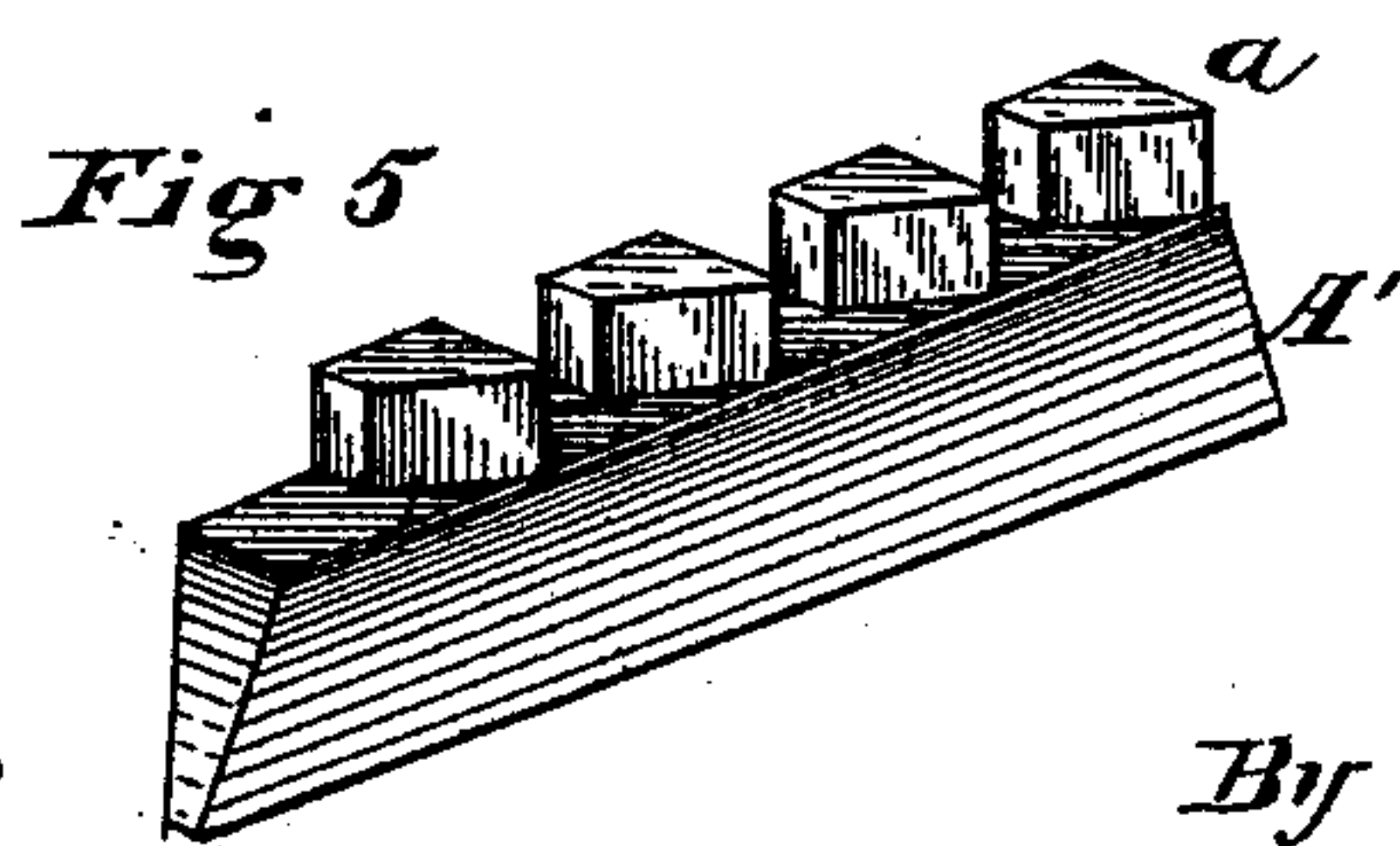
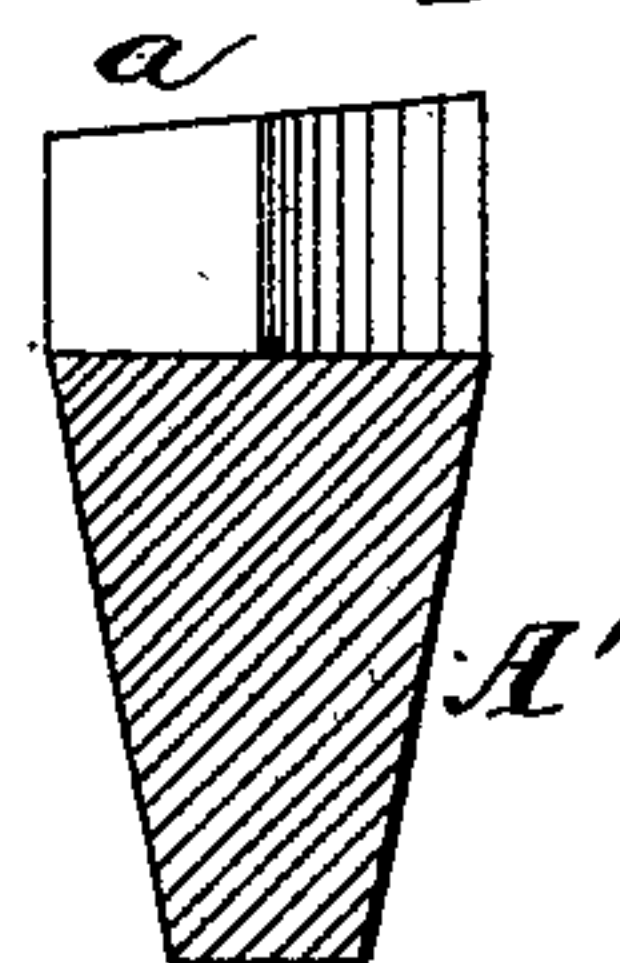


Fig 5

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UNITED STATES PATENT OFFICE.

CHESTER W. CLARK, OF MISHAWAKA, INDIANA.

MACHINE FOR REDUCING WOOD TO PULP.

SPECIFICATION forming part of Letters Patent No. 229,588, dated July 6, 1880.

Application filed February 13, 1880.

To all whom it may concern:

Be it known that I, CHESTER W. CLARK, of Mishawaka, in the county of St. Joseph and State of Indiana, have invented a new and useful Machine for Reducing Wood to Pulp suitable for the manufacture of paper, and also a grinding device, to be used in connection with such machine, for grinding or sharpening the knives in the machine when they become dull, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of the machine with the cover to the feed-box open. Fig. 2 is a transverse section on line *x x*, Fig. 1. Fig. 3 is a longitudinal section on the line *y y*, Fig. 1. Fig. 4 is a transverse section, showing the machine with the cylinder-cover removed and the grinding device put into position, as shown by dotted lines, for grinding the knives. Fig. 5 is a perspective view, on an enlarged scale, of a knife-socket with knives combined. Fig. 6 is a transverse section of Fig. 5 on an enlarged scale.

Like letters of reference indicate like parts in the several figures of the drawings.

The invention consists in the manner of forming the cylinder and securing the knives therein, in the shape of the knives and their arrangement on the cylinder-surface, the feeding mechanism driven from the cylinder-shaft, the feed-box having the springing or yielding bottom, and the grinding device, arranged to grind the knives without removing them from the cylinder, all of which is hereinafter more particularly shown and described.

In the drawings, A is the cylinder, A' the knife-sockets, and *a* the knives. B is the pulley on the cylinder-shaft, for operating the machine by means of any suitable power. B' is a smaller pulley on the opposite end of the cylinder-shaft, for operating the feeding mechanism by a belt passing to the wheel C, supported on shaft C', which shaft, by means of the ordinary worm-gear pinion, operates the wheel D on the screw-shaft D'.

E is the feed-box, having a portion of its bottom *e*, adjacent to the cylinder or knives, hinged to the other portion and supported by spring *e'*, for the purpose of relieving the machine of splinters or small pieces of wood.

The upper portion of the machine carrying the feeding mechanism is secured to the lower portion at the rear by means of hinges G, and at the front by means of a latch, G', so that by unlatching at the front the feeding mechanism may be let down and the cylinder-cover elevated, so that the grinding device may be brought into the position shown by dotted lines in Fig. 4, for the purpose of grinding the knives.

The grinding device consists of a wheel, H, made of emery or other material used for grinding edge-tools, arranged upon a shaft having a pulley, H', upon the opposite end of it. This shaft, carrying wheel H and pulley H', is socketed upon a bar, I, so as to slide back and forth thereon, the object being to bring the wheel H in contact with each knife. The bar I is secured to the end of a rod or bar, I', secured to the upright I² by a hinge or adjustable joint, *i*, by means of which the height of the wheel H, when in the position shown by dotted lines in Fig. 4, may be adjusted to bring the rim of wheel H in proper contact with the knives for grinding the same.

The grinding device is hinged or otherwise secured at J to the corner of the machine, so that it may be swung out to the position shown in Fig. 1, or removed entirely when not in use, and back to that shown in Fig. 4 when grinding the knives. The grinding-wheel is driven by any suitable power applied to the pulley H'.

The knives *a* have nearly square and nearly flat or level tops, being beveled backward from the front edge to give a shear-cut, and beveled downward from the front edge toward the rear an eighth of an inch or less to give clearance to the rear portion of the top surface of the knives. The knives are placed in rows both lengthwise and around the cylinder, so as to cross each other at right angles, so that each longitudinal row, as the cylinder is rotated, shall cover the space omitted in the row immediately preceding it, and every two rows give a cutting-edge the entire length of the cylinder. The knife-sockets A' are wedge-shaped, the inner ends being adapted to cover the outer portion of the cylinder, and the outer ends being of the proper thickness to form the outer surface of a cylinder enlarged in diameter by as much as twice the length of wedge

shape of the knife-sockets. The knife-sockets extend the whole length of the cylinder and are beveled at each end from their outer to their inner sides, as shown in Fig. 4, and when
5 arranged on the cylinder as shown in Figs. 3 and 4, they are clasped at their ends by the flanges K, which are held firmly in position by means of the screw-nut K' upon the cylinder-shaft.

10 In operating the machine the blocks of wood, L, to be reduced to pulp are placed in the feed-box E with the length of the wood fiber against the knives *a*, and are fed or pressed down against the knives by the head *b* of the screw-
15 shaft D', the gearing between the cylinder-shaft and the feeding mechanism being such as to keep the wood at all times pressed or fed against the knives.

Having thus described my invention, what
20 I claim, and desire to secure by Letters Patent, is—

1. The knife-sockets A', being wedge-shaped and having beveled ends, when arranged upon a cylinder, A, and secured thereon by means
25 of flanges K, substantially as and for the purpose specified.

2. The knives *a*, having nearly square and nearly level or flat tops, beveled backward and downward from the front edge of the line of
30 cut, substantially as and for the purpose specified.

3. In a machine for reducing wood to pulp, the combination of the feeding mechanism, consisting of the box E, screw-shaft D', having head *b* and operated by wheel D, with pinion
35 B', operated by the knife-cylinder shaft, for producing a uniform feed corresponding with the velocity of the knives, substantially as specified.

4. In a machine for reducing wood to pulp, 40 a feed-box, E, having a portion, *e*, of its bottom next to the knives made yielding, to relieve the machine of splinters or small pieces of wood, substantially as specified.

5. A wheel, H, and pulley H', in combination with bar I, said wheel being made adjustable vertically with reference to the downward
45 bevel of the knives *a* in the cylinder, and longitudinally upon bar I, to grind the knives in the cylinder, substantially as specified. 50

6. In a machine for reducing wood to paper-pulp having a cylindrical knife-surface of the construction shown, the block L, placed length-
wise of the wood fiber against the said knife-surface, substantially as and for the purpose
55 specified.

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Witnesses:

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