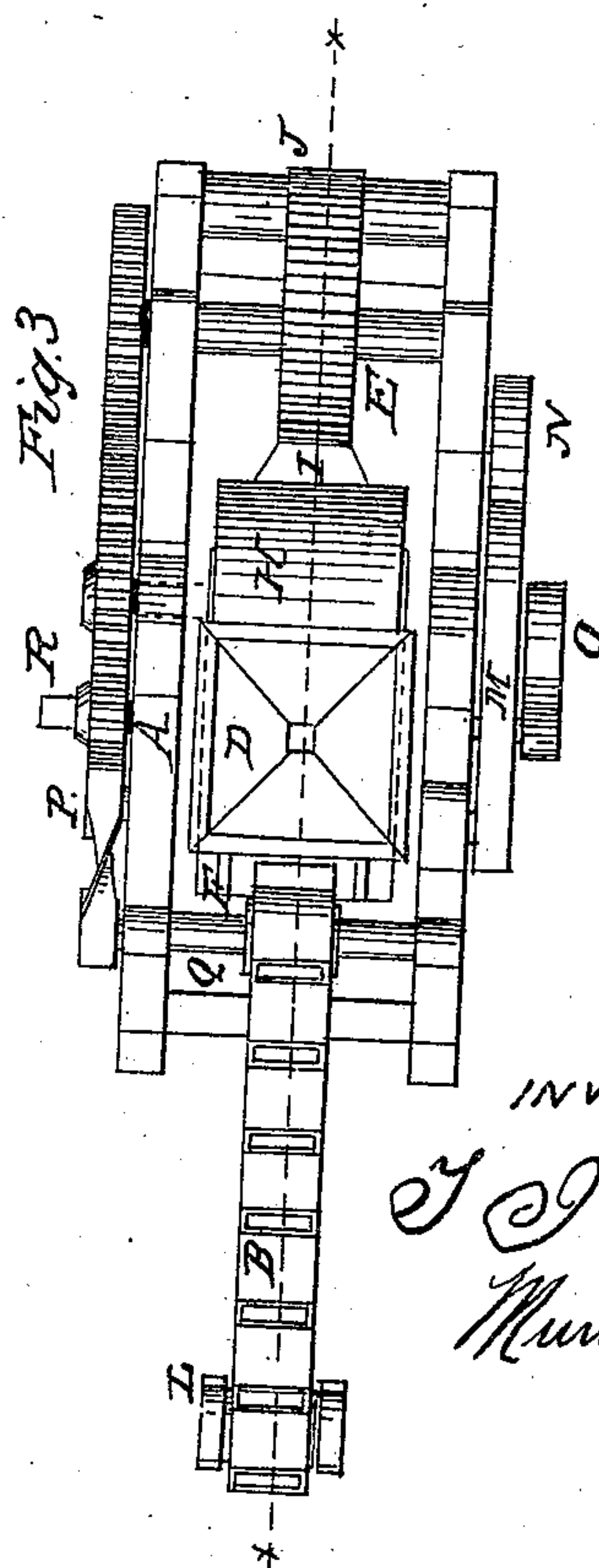
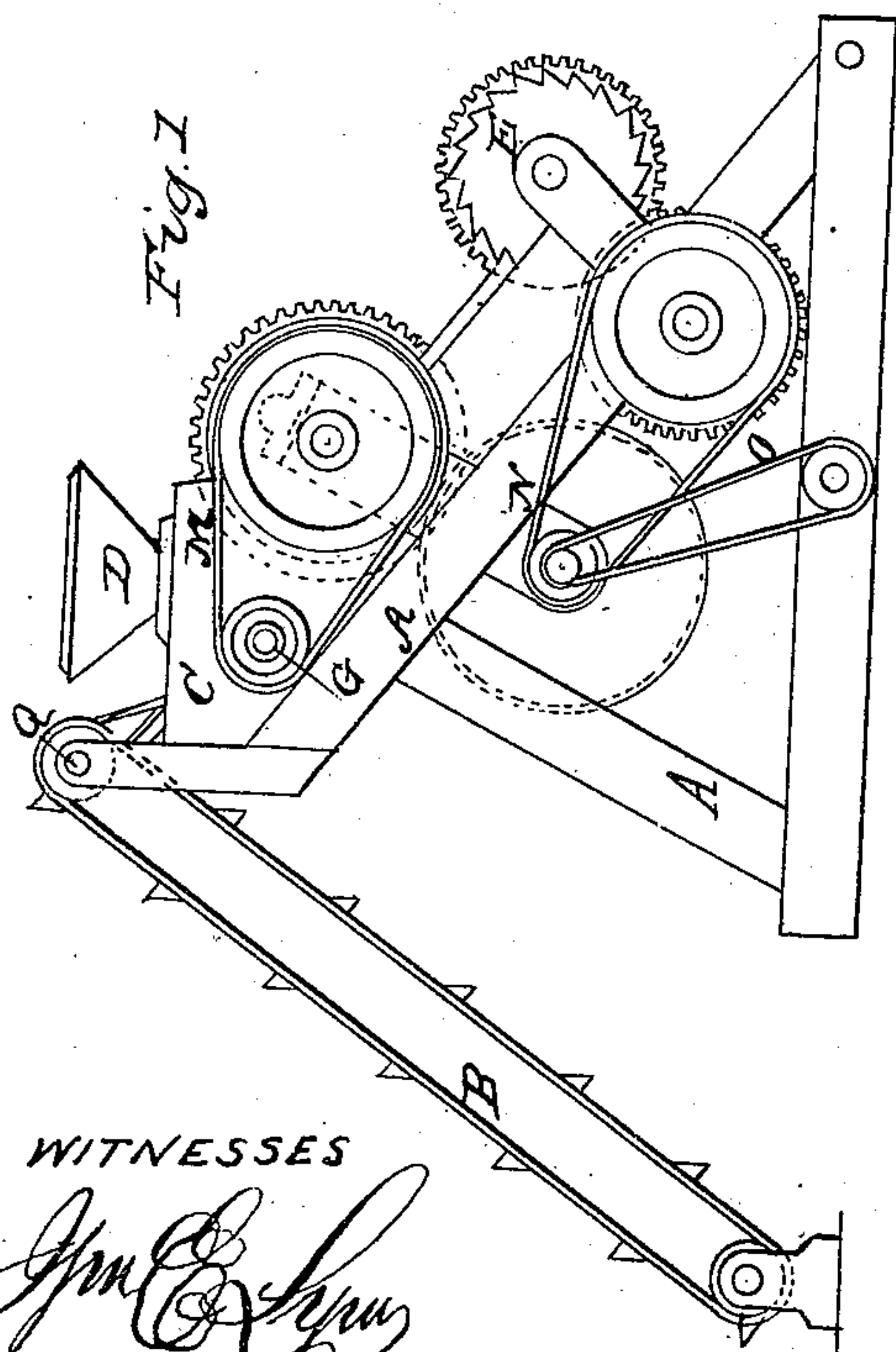
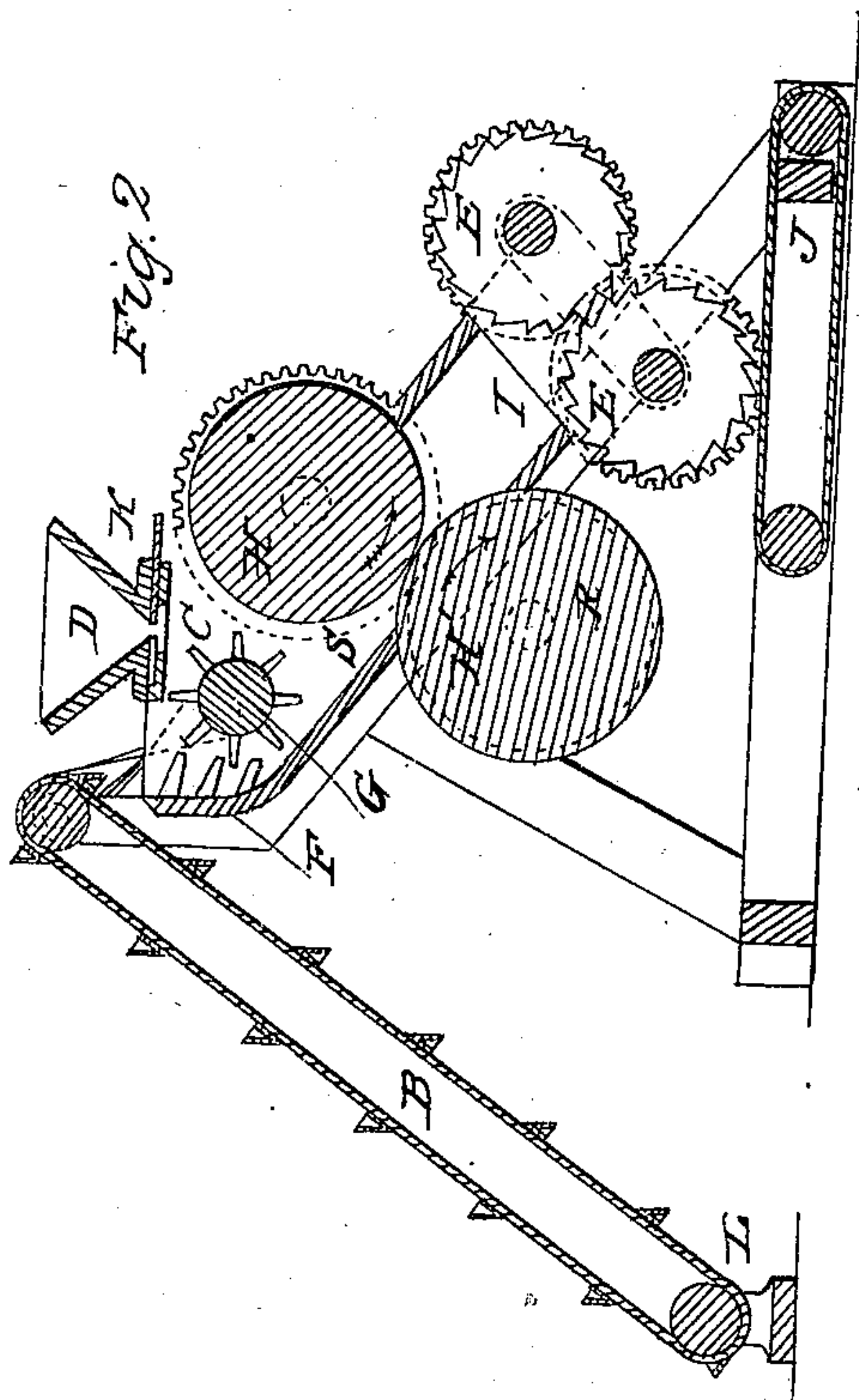


T. J. WELLS.

Peat Machine.

No. 52,472.

Patented Feb. 6, 1866.



WITNESSES

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# UNITED STATES PATENT OFFICE.

T. J. WELLS, OF NEW YORK, N. Y.

## IMPROVED PEAT-MACHINE.

Specification forming part of Letters Patent No. 52,472, dated February 6, 1866.

*To all whom it may concern:*

Be it known that I, THOMAS J. WELLS, of the city, county, and State of New York, have invented a new and useful Improvement in Machines for Treating Peat; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a machine made according to my invention. Fig. 2 is a longitudinal vertical section on the line *x* of Fig. 3. Fig. 3 is a plan.

Similar letters of reference indicate like parts.

The object of this invention is the preparation of peat for fuel in a condensed state, with or without coal-dust or other fine concentrated combustible matter, so that it can be handled with convenience and transported with ease and economy to be used at a distance from the place where it is dug.

It consists in a combination and arrangement of devices by means of which the peat is reduced to a suitable condition and form for being handled and dried, the crude peat being elevated by mechanical means to the top of the machine and delivered to the action of knives or arms which revolve between fixed knives or arms so as to break it up. This action on the peat is had beneath a hopper, from which is delivered, continuously, a supply of fine coal-dust or other fine concentrated combustible material. It is next passed between smooth cylinders of unequal diameters, or between cylinders which are revolved at unequal velocities, whose action is to destroy the natural organization of the peat and to destroy the tubular character of the undecomposed fibers which are interlaced through it, rubbing and grinding the mass so as to reduce it to a very fine plastic state. From thence the peat descends or is carried against molders, which consist of rolls upon whose peripheries are formed triangular depressions, which are arranged on one roll conversely to their arrangement on the other, so that when the depressions meet or articulate in the revolution of the rolls a cavity is formed whose sides are parallel. The peat mass presses, by

gravity, against the faces of the rolls and fills the depressions as fast as they are presented, and is afterward delivered upon the other side of the rolls on a traveling belt or platform, which carries it to the drying-ground, or to workmen, who remove it to the place where it is to be dried.

A is a frame which supports the moving parts of the machine. Its form is such as to facilitate the easy and convenient descent, by gravity, of the peat from the higher to the lower parts of the machine, the crude peat being delivered to it at its top. In the higher part of the frame is a box, C, with straight sides, which is the receptacle that first receives the crude peat. The bottom of this receptacle is inclined forward, and its rear side and bottom are armed with projections or teeth F, in a rising series, between which pass revolving teeth which project from a shaft, G, arranged within the box C.

The journals of the shaft G have bearings in the sides of the box, and the ends of the shaft outside of the box have pulleys, one of which receives a band, M, that goes around a pulley on the shaft of the upper rubbing-cylinder, H, and the other a band, P, that drives the shaft Q, from which the elevator B is suspended.

The elevator B is composed of an endless band provided with buckets, and its lower end goes around a shaft placed in a shoe, L, which may be fastened or secured to the ground, or to any platform, or directly on the bottom of the peat-bed.

The crude peat is shoveled or placed in the buckets of the elevator, and is carried up in them to the top of the machine, where, by the turning of the buckets, it is dumped into the box C directly upon the fixed arms F and the arms of the revolving shaft G, by and between which it is torn apart.

It is sometimes desired to mix fine coal-dust or other fine combustible material of a concentrated character with the peat. To this end I have placed a hopper, D, over the shaft G, such hopper having a gate, K, at its bottom that keeps it closed when pushed in.

When it is desired to add coal-dust or other material to the peat the hopper is kept supplied therewith, and it is drawn thence and allowed to fall on the peat while it is being cut up by



the knives or pins of the shaft and of the box in regulated quantities by opening the gate to a greater or less extent. The coal-dust or other substance becomes, by this means, thoroughly mixed with the peat.

The peat becomes broken up into a common mass by the operation of the knives or pins on the shaft G and those of the box, its lumpy character being destroyed, so that it will easily glide down the bottom of the box toward the cylinders H H'. These cylinders may be of metal or of any suitable material. They revolve between the vertical sides of the box C, the upper cylinder rising above the upper edges of the box, and the lower cylinder working through its bottom, which is cut away to receive it and allow it to revolve without producing friction. That part of the bottom of the box which is above cylinder H' is cut away a little, so as to allow any water which is separated from the peat to run away. The cylinders H H' are geared together in this instance by gears of equal diameter, but the cylinders themselves are of unequal diameters, the lower cylinder, H', being the largest, from which it follows that since both cylinders make their revolution in the same period of time, the surface of the lower cylinder, H', will rub against and slip on that of the upper. They are placed close to each other, so that they will revolve in contact, and are, in this example, placed in such relative positions that a line which is tangential to each at their point of contact will be about parallel with the bottom of the box C. Their point of contact is above the bottom of the box far enough to enable the peat to readily enter the angle between their peripheries. The power to drive the cylinders, and through them the other moving parts of the machine, is applied to the shaft R of cylinder H' on the end opposite to that seen in Fig. 1. On the shaft of cylinders H H' are mounted gear-wheels of equal diameters, which engage with each other, so that their shafts are driven at the like speed. When the peat falls against the cylinders, after it has passed the toothed shaft G, it is drawn between them, as between feed-rolls, the lower cylinder rubbing the peat against the upper cylinder with a tearing and grinding action, for the reason that its surface moves with greater speed than that of the other, and at the same time crushing the peat, so that when it emerges from between them its fibers—that is to say, the undecomposed matter which is interlaced throughout the peat—is crushed and also torn to pieces. The cylinders are set so close together that the peat, in passing between them, will be made very fine, so that its air and water cells will be destroyed and the air and water contained in the peat will be released, the water being forced or held back as the peat is drawn forward between the cylinders, trickling down between the bottom of the box and the lower cylinder at S, and so reaching the ground. The peat passes the cylinders in a very thin state, and is delivered, much condensed, into

the lower part, I, of the box. This part I is a covered receptacle whose lower end is narrowed to the width of the molding-cylinders E.

These molding-cylinders have angular depressions in their peripheries, whose articulations form molds of the shape of a parallelogram.

The lower part of the receptacle I has its sides gradually narrowed to the width of the cylinders E, as shown in the plan, Fig. 3.

The gravity of the mass of peat, or of the peat and coal when the two are mixed, and also the pressure produced by the accumulations thereof, that are continually brought forward by the cylinders H H', cause it to be forced against the faces of cylinders E with sufficient energy to fill their depressions as they present themselves, and the portions which fill them are carried through or between the cylinders and delivered upon the belt J in blocks of a shape conforming to the depressions in said molding-cylinders.

The belt J is driven by a band, O, from the shaft of the lower cylinder, H', and it may be made of any suitable length, so as to carry the blocks to the drying-ground, or to a house or other place for drying them by artificial means.

The molding-cylinders E have gears on the ends of their shafts at one side which mesh together, and they are driven by a belt, N, from a pulley on the shaft of cylinder H', said belt going around a pulley on the shaft of one of the cylinders E.

The blocks of peat are stacked and dried by the circulation of air through them and by the heat of the sun, or by artificial means, and are then ready for transportation and use.

The peat is greatly condensed and diminished in bulk by the treatment above described. Even before it is dried it is found to have considerable density in comparison with its condition when crude.

Instead of using rubbing-cylinders of unequal diameters, cylinders of the same diameter may be employed by running them at different speeds.

It will be observed that the cylinder G is driven by a belt, M, from a pulley on the shaft of the upper mashing-cylinder, H, and that the elevator is driven, by means of a belt, P, from the farther end of the shaft of cylinder G. The delivery belt or apron J is driven in this example by a band, O, from a small pulley on the shaft R of cylinder H'.

The usual moving or rotating parts of the machine may be driven in any other manner, and the form of the several parts of the apparatus may be varied without departing from the principle of my invention.

The action of the cylinders H H' on the peat is not like the action of ordinary pressure-rollers, but they, while feeding the peat forward in the machine, tear it apart, owing to the difference in the speed at which their peripheries move, at the same time reducing it very fine and excluding the water released from its cells, so that the peat is delivered to



the molders in a condensed state. The peat, after having been passed through the cylinders H H', will have parted with so much of its water that the succeeding operation of drying is much hastened.

I claim as new and desire to secure by Letters Patent—

1. Mashing and grinding peat and breaking up its air and water cells between smooth cylinders whose peripheries move at different velocities, substantially as described.

2. The cylinders H H', whose peripheries are made to move at different velocities, in combination with a series of fixed or revolving knives, or both, for breaking up crude peat before it is delivered to the action of said cylinders, substantially as described and shown.

3. The cylinders H H', whose peripheries move at different velocities, in combination with a series of fixed or revolving knives, or both, and with an elevating apparatus for

delivering crude peat to the action of the knives and of the cylinders, substantially as shown.

4. Cylinders H H', constructed and operating substantially as described, in combination with the molding-cylinders E E, substantially as above described.

5. In combination, the cylinder G, armed with knives or arms, as described, the hopper D above it, and the cylinders H H', substantially as described.

6. Mixing coal-dust or other fine concentrated combustible material with crude peat while its lumps are being broken up, by means of a hopper, D, for containing such coal-dust or other material, and of a system of revolving knives or arms below the hopper, substantially as described.

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Witnesses:

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