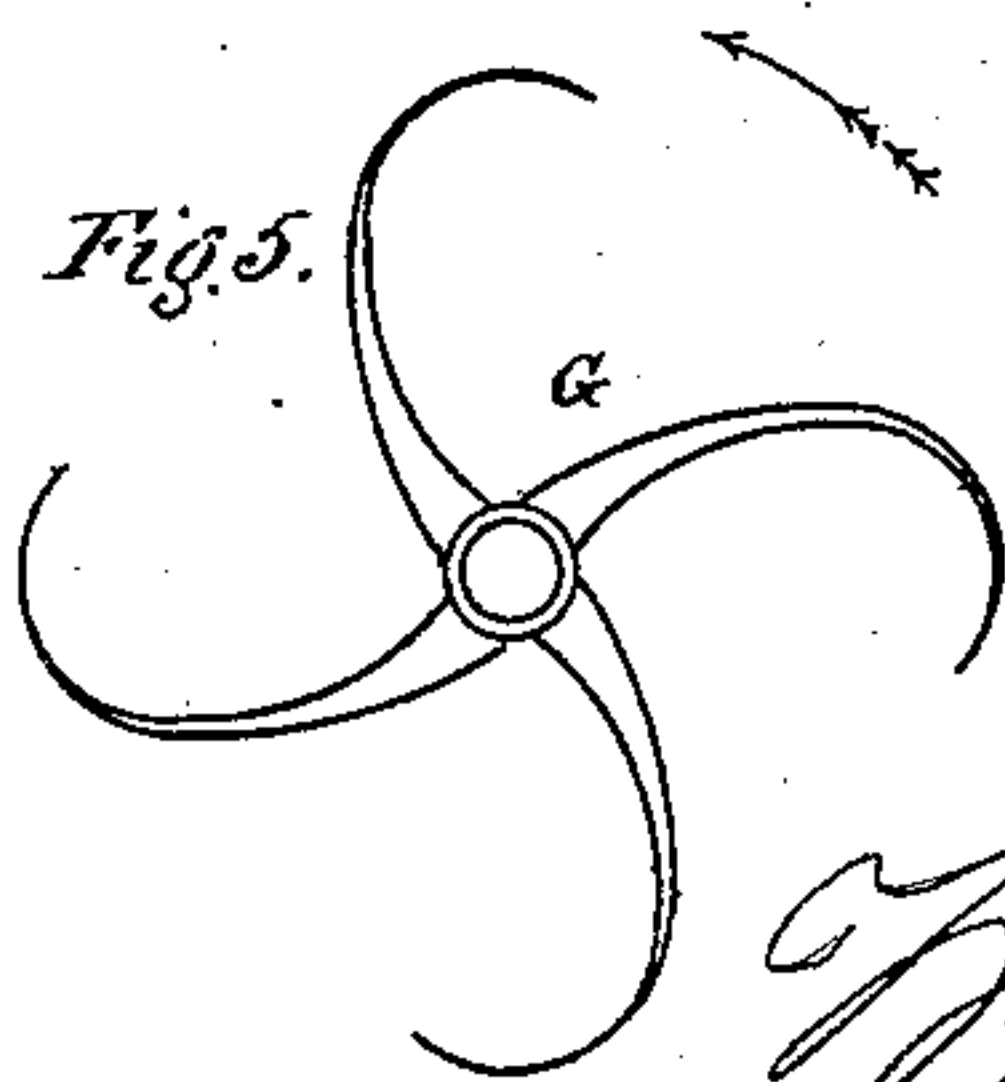
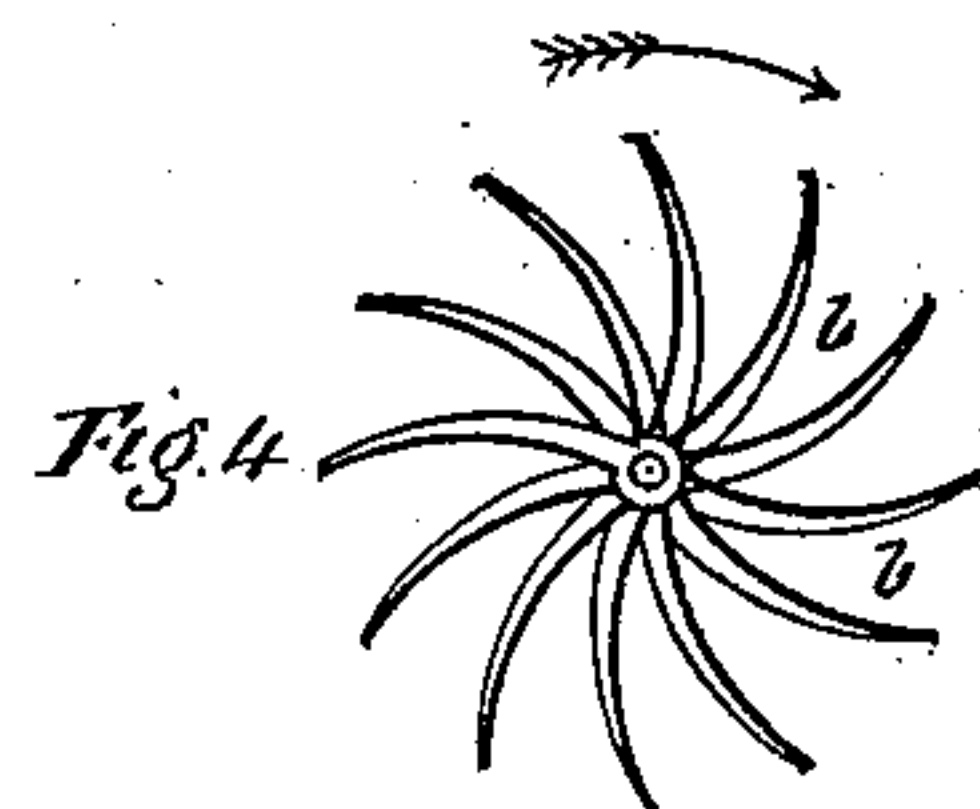
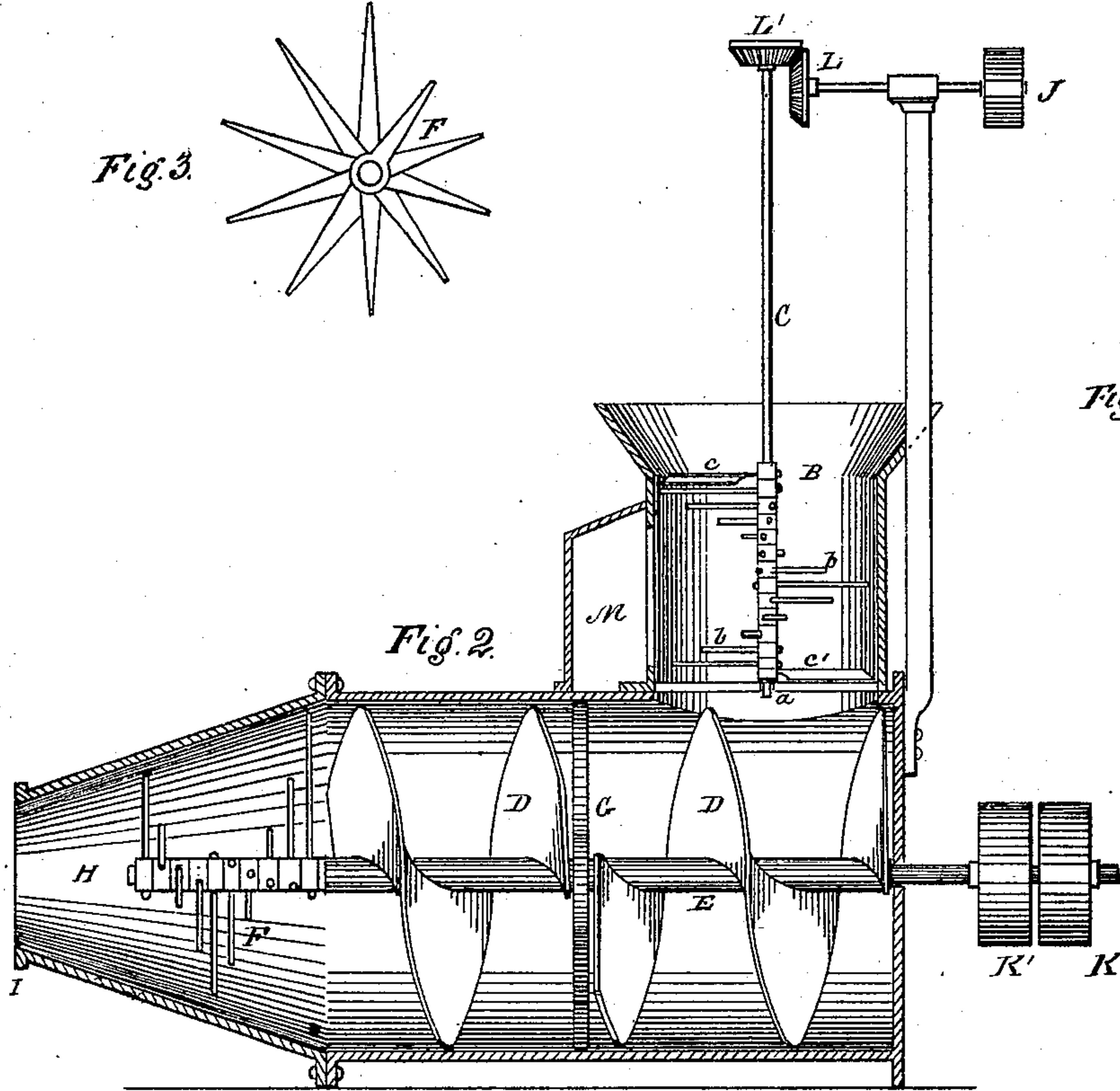
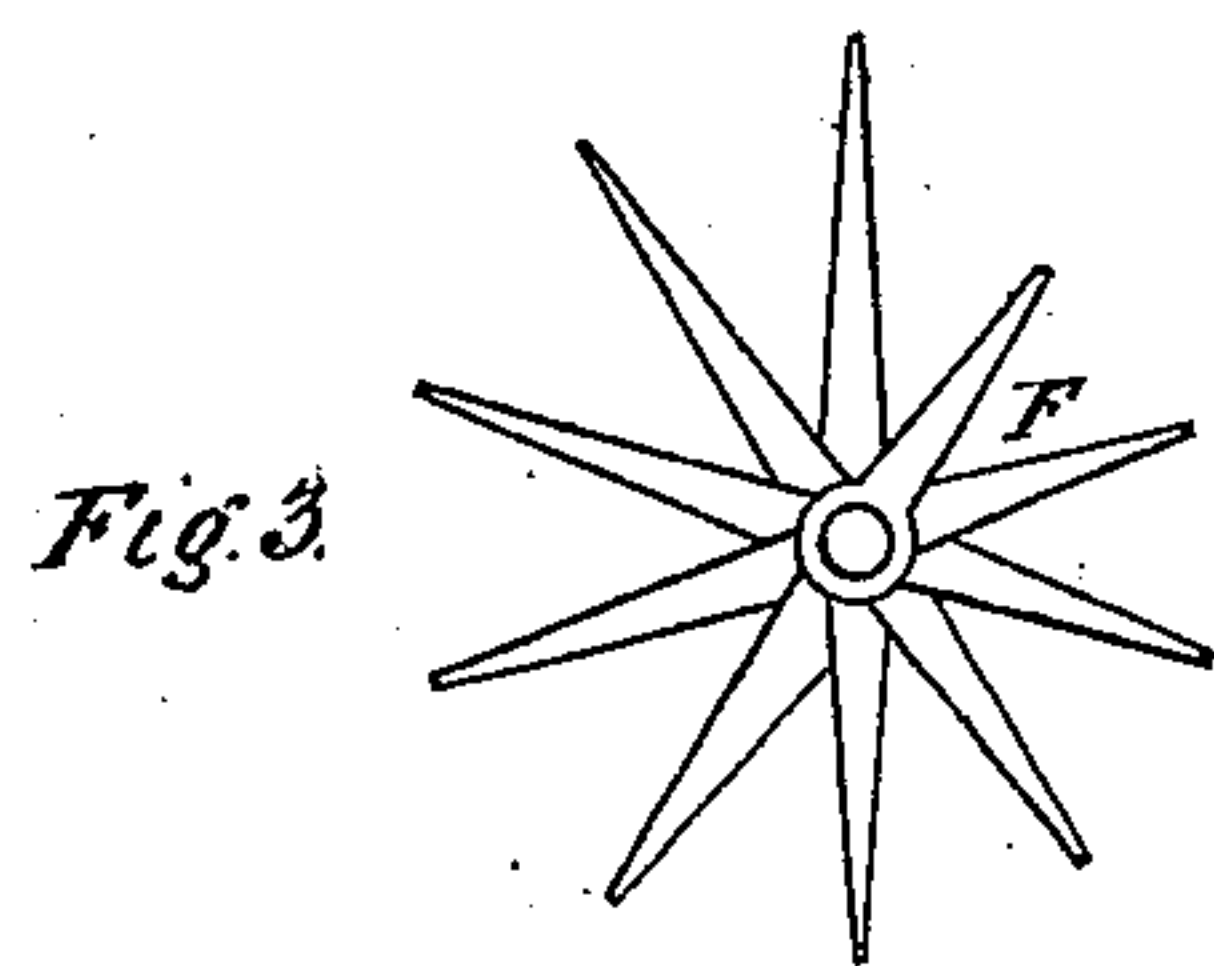
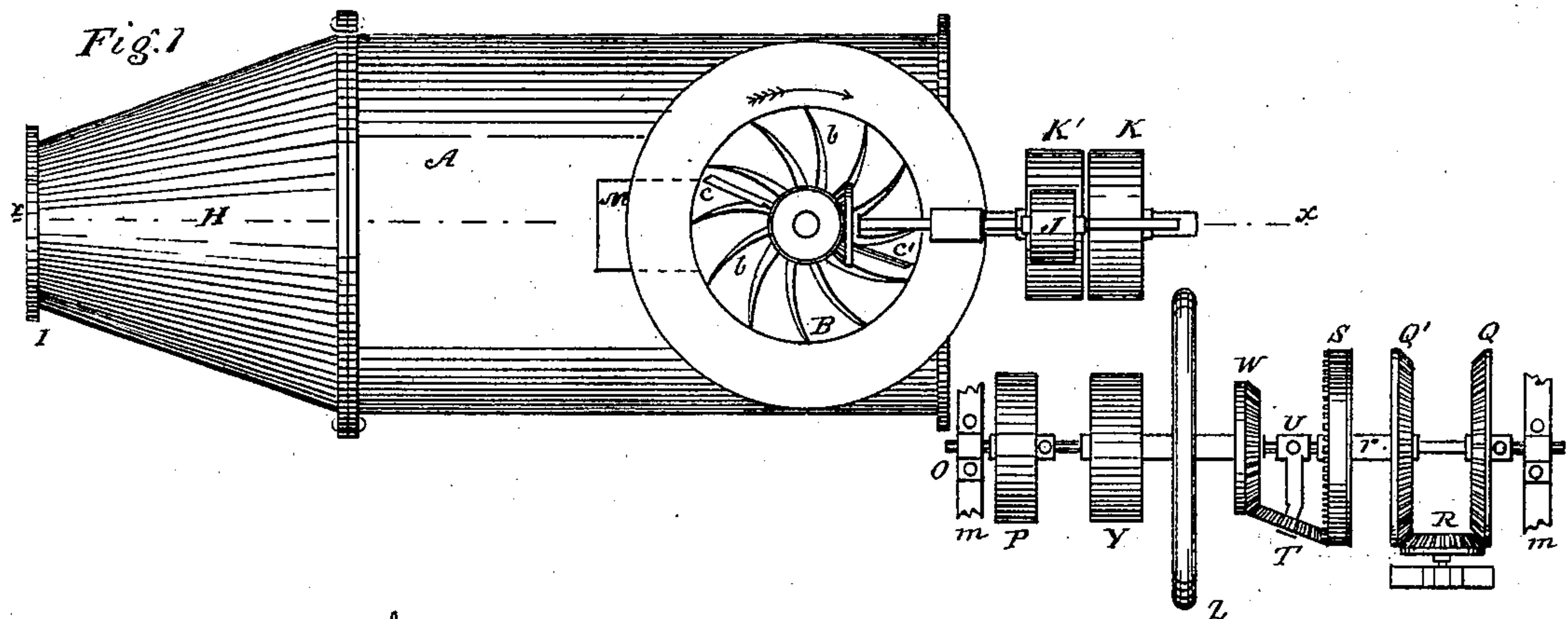


W. S. TISDALE.

Peat-Machines.

No. 148,527.

Patented March 10, 1874.



Witnesses,
Thos. Thornton
W. A. Hull

Inventor.

William S. Tisdale

UNITED STATES PATENT OFFICE.

WILLIAM S. TISDALE, OF WHITE PLAINS, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM HELLINS, OF JERSEY CITY, N. J.

IMPROVEMENT IN PEAT-MACHINES.

Specification forming part of Letters Patent No. 148,527, dated March 10, 1874; application filed June 4, 1873.

To all whom it may concern:

Be it known that I, WILLIAM S. TISDALE, of White Plains, Westchester county and State of New York, have invented certain new and useful Improvements in Machinery for Cutting, Compressing, and Condensing Peat for Fuel; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings forming a part of this specification.

This invention relates to improvements in machinery for the purpose of preparing peat for use as fuel; and its object is to comminute and compress the peat and reduce it to a homogeneous mass, in such a manner that it may be brought into a convenient condition for transportation, and for use as fuel in grates, stoves, steam-boiler furnaces, and for blast-furnaces or metallurgical operations. For this purpose I employ a peculiar combination or combinations of devices, hereinafter described, by means of which the crude peat is thoroughly comminuted or masticated and reduced to a homogeneous mass, the fibrous matter therein being cut up and dissevered and mixed with the portions which are more fully decomposed, after which the whole mass is ejected from the machine compressed and condensed to any desired extent, the degree of compression being governed according to the purpose for which the fuel is designed to be used; and, in connection with these devices above mentioned, I use a mechanism consisting of a peculiar arrangement of gear-wheels and levers secured upon one shaft, for the purpose of transmitting power and motion, by means of which a greater velocity may be given to the machine with but a slight loss from friction, and the expenditure of driving power may be greatly economized, more especially when the peat contains a large proportion of fiber or matter not fully decomposed.

In order that my invention may be fully understood, I will proceed to a more particular description thereof, referring to the accompanying drawings and to the letters of reference marked thereon.

Figure 1 represents a plan view of my im-

proved machine, together with the mechanism for transmitting power and motion to the same. Fig. 2 is a vertical longitudinal section of my improved machine, taken through the line *x x* in Fig. 1. Figs. 3, 4, and 5 are detached views, hereinafter referred to.

Similar letters of reference indicate like parts in all the figures.

A represents the body of the machine, which may be of metal or of wood, and is cylindrical in form. B is a hopper, into which the crude peat is fed, the lower portion of which is connected to the main body A of the machine, and is cylindrical in form, and its upper portion may be of any desired dimensions and form. Passing up through the center of this hopper B is a vertical shaft, C, the lower end of which is supported upon any suitable bearing, *a*, provided at or near the extreme lower end of the hopper, upon which said shaft is secured a series of feed-knives, *b b b*, which are set spirally upon the said shaft, each knife receding a little from the one immediately above it, and which have sharp cutting-edges, which cut the fibers of the peat as it passes downward into the main body of the machine. The planes of these knives are also slightly inclined from their line of motion. By these arrangements of the said knives—namely, by reason of their being set spirally upon the shaft C, to which they are secured, and being slightly inclined—when the said shaft C is revolved, the peat is thereby gradually forced downward into the body of the machine, and during its passage the fibrous portions thereof are cut into short lengths by the cutting-edges of the knives. Secured upon this shaft are also two feeding-blades, *c c'*, for the purpose of further facilitating the downward movement of the peat. The upper blade *c* moves slightly in advance of the uppermost of the knives *b*, and the lower blade *c'* moves slightly behind the lowest of the said knives. These blades are not provided with cutting-edges, and are set at a greater angle of inclination than are the knives. D is a spiral web or screw, which is secured upon a horizontal shaft, E, which latter is provided with any suitable bearings supported by the main body of the machine.

This spiral web or screw receives the peat as it emerges from the hopper B, and carries it forward through the machine to a series of discharge-knives, F. It is made in two sections, being divided about midway, and between these two sections is located a device, G, for pulping the peat. This pulping device G consists of two or more arms set radially on the shaft E, and secured thereupon. These arms are made of steel or other flexible and elastic material, and are made thin toward their points or outer ends, so that they will press against the inner surface of the cylinder A, but will yield when subjected to pressure by reason of any hard substance passing between them and the cylinder. In Fig. 5 is shown a side elevation of this pulping device with four arms.

The series of discharge-knives F are secured upon the shaft E within a continuation, H, of the main body of the machine. These knives F are set spirally upon the shaft E, so as to force the peat toward the orifice I, and for the more effectually accomplishing this are slightly inclined, in manner similar to the feed-knives above described. They are provided with cutting-edges for the purpose of further cutting and comminuting the fibers of the peat as it passes outward. The portion H of the body of the machine is made conical or gradually tapering toward the orifice I, for the purpose of compressing and condensing the peat to any extent that may be desired, the orifice I being made smaller in proportion to the degree to which the peat is to be condensed.

Motion being communicated to the shafts C and E by means of the pulleys J and K and beveled gear-wheels L and L', the crude peat is fed into the hopper B, where it is acted upon by the knives *b b b*, which force it downward into the body of the machine, and cut the fibers contained therein into short lengths.

In case a stone or other hard substance enters the hopper with the peat, such substance is carried round by the knives and thrown into a box or recess, M, provided at one side of the hopper, and connecting therewith.

As the peat passes into the main body of the machine it is caught by the screw D, which carries it forward toward the other end of the machine, and during its progress, or a portion thereof, it is acted upon by the pulping device G, which, acting in connection with the two series of knives and the screw, thoroughly mixes and reduces it to a pulpy mass. After passing from the device G, the peat is carried forward by the screw to the discharge-knives F, which further cut and divide any fibrous matter contained therein, and press it through the tapering discharge tube or nozzle H, by which means it is discharged through the orifice I in a homogeneous compressed mass.

The mechanism which I use, in conjunction with this improved machine, for the purpose of transmitting power and motion from the

steam-engine or other motor used to the moving parts of the machine, may, in many cases, be employed with great advantage, more especially when it is desirable to increase the speed of the machine, and also when much fiber exists in the peat. In this mechanism, O is a shaft, upon which the wheels are placed, and which is provided with any suitable bearings, *m*. Keyed or otherwise secured upon this shaft is a pulley, P, which receives motion directly from the steam-engine or other motor used for driving the machine. Q is a beveled gear-wheel, which is keyed or secured to the shaft, and which communicates motion in a reverse direction to a corresponding wheel, Q', through the medium of the intermediate R. This wheel Q' imparts motion to another gear-wheel, S, both of them being secured upon the same sleeve or thimble *r*, which is loose upon the shaft. T is a revolving pinion, which engages with the wheel S, and has its axis and rotates upon the outer end of an arm or lever, U, which latter is secured to the shaft and revolves therewith. W is a gear-wheel, which is loose upon the shaft, and receives motion from the pinion T, and imparts motion to the pulley Y, which latter is secured upon the same thimble or sleeve which carries the wheel W, as is also the fly-wheel or balance-wheel Z, both Y and Z being also loose upon the shaft.

It will be evident that the pulley P, wheel Q, and lever U will each make the same number of revolutions, and in the same direction, and the wheels Q' and S a like number of revolutions, but in the opposite direction, and that, therefore, if the wheels S and W were of the same diameter, and had the same number of teeth, the wheel W would make three revolutions while the wheel S was making one, by reason of the pinion T having two motions, the one on its own axis and the other bodily around the shaft O.

The pulley Y will make the same number of revolutions as the wheel W, and, being connected by a belt, in the ordinary manner, with the pulley K, will communicate motion to the shaft E of the machine, and from thence, by the pulleys K' and J, to the shaft C.

The shaft E may be driven at a speed of from fifty to one hundred and fifty revolutions per minute, and the shaft C should make about two revolutions to one of the shaft E.

I do not claim, broadly, the mechanism herein described for transmitting power and motion; neither do I claim, separately, the use of the feed-knives, nor the discharge-knives, nor the screw, for the purposes specified; but

What I claim as my invention is—

1. The combination of the feed-knives *b b b*, screw D, made in two parts, pulper G, and discharge-knives F, all constructed and arranged to operate as herein shown and described.

2. The pulper G, constructed as herein described, in combination with the screw D and

nozzle H, both constructed and arranged as and for the purposes herein set forth.

3. In a peat-machine having a smooth inner surface, and being without stationary knives, the knives F and b, constructed and arranged as herein described, in combination with the screw D, as and for the purposes set forth.

4. The mechanism herein shown and de

scribed, consisting of the wheels Q, Q', R, S, T, and W, and lever U, in combination with the screw D and knives F and b, as and for the purposes set forth.

WILLIAM S. TISDALE.

Witnesses:

JOHN S. THORNTON,
W. A. HULL.