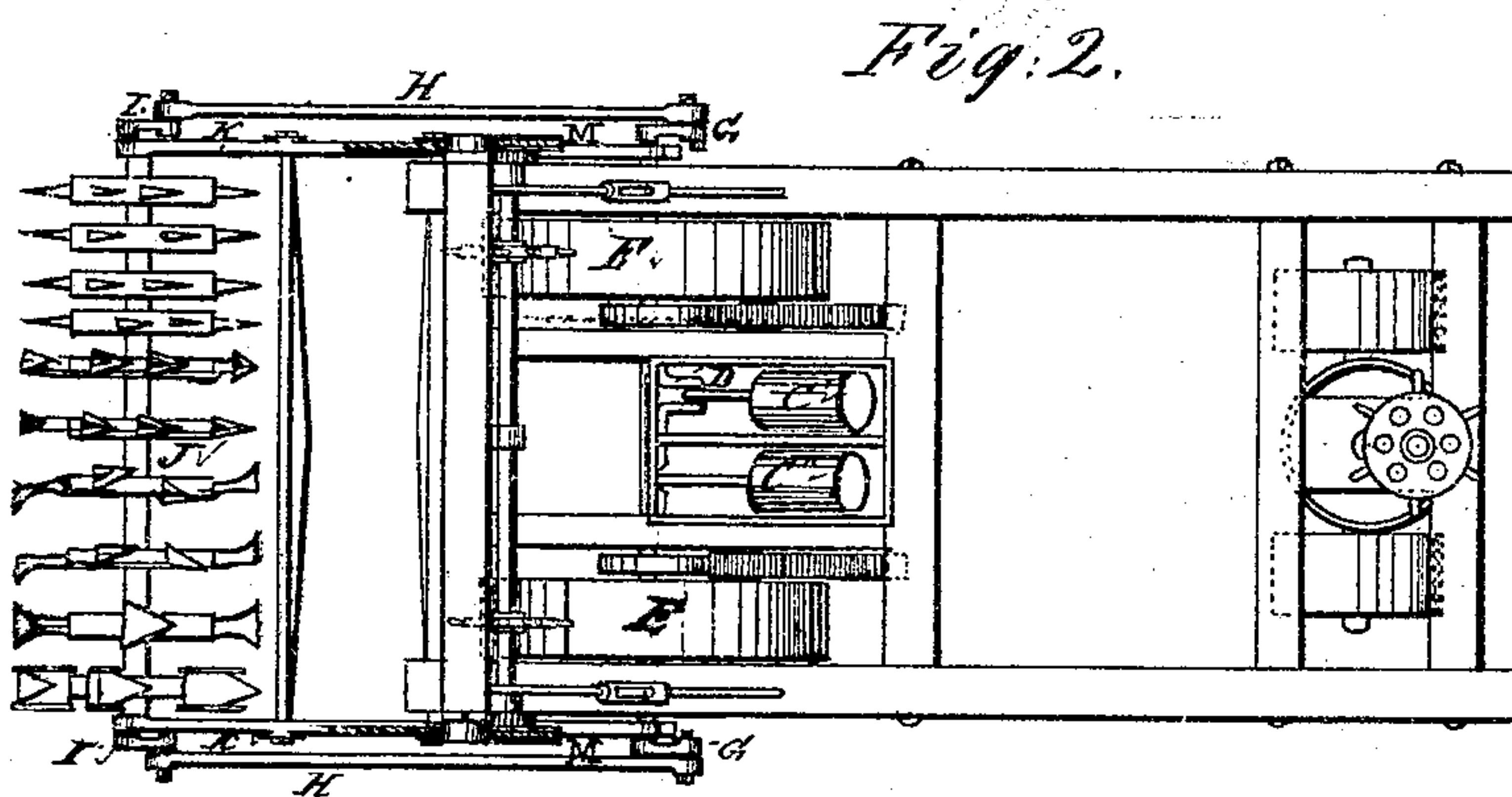
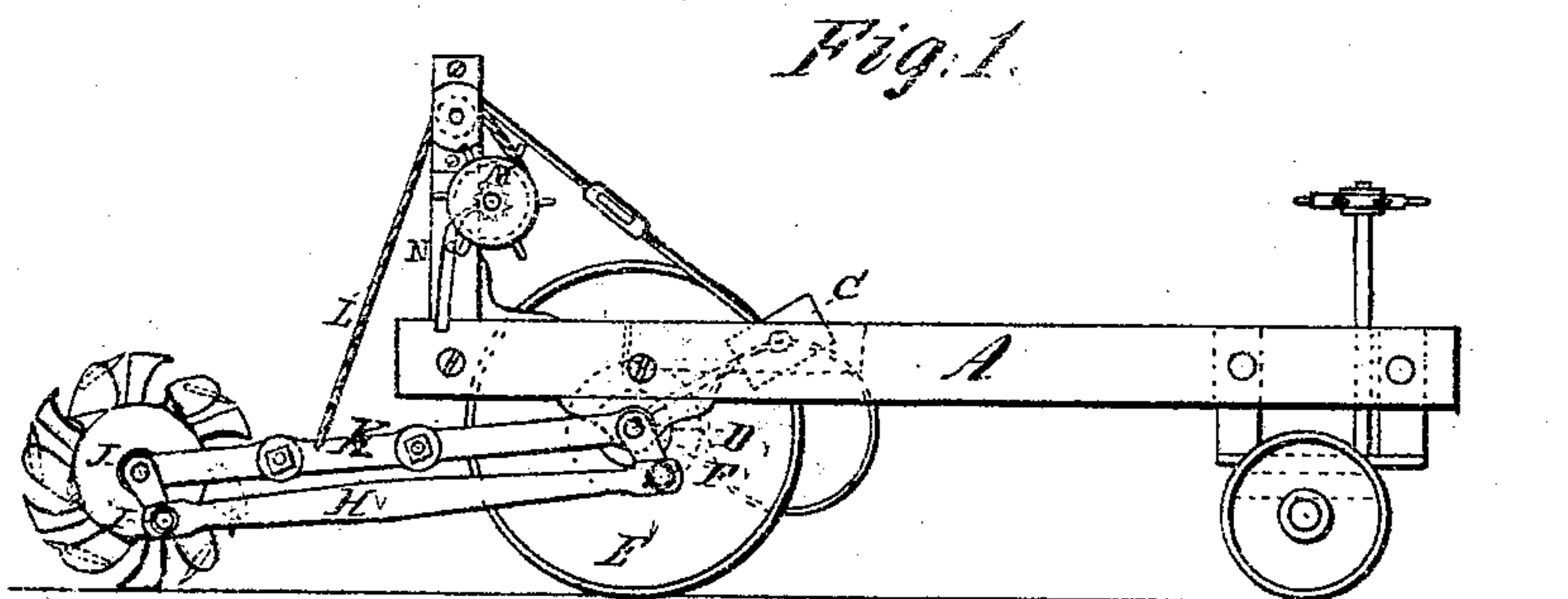


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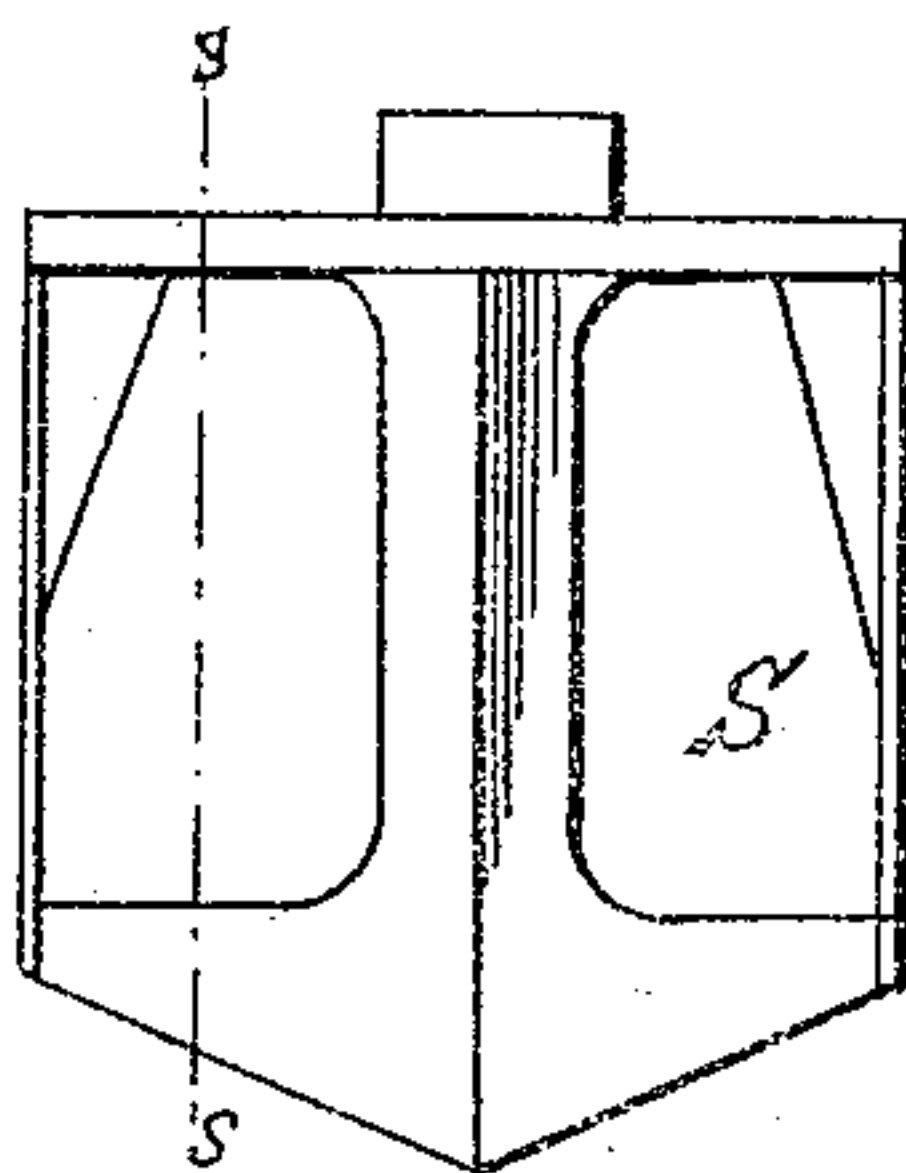
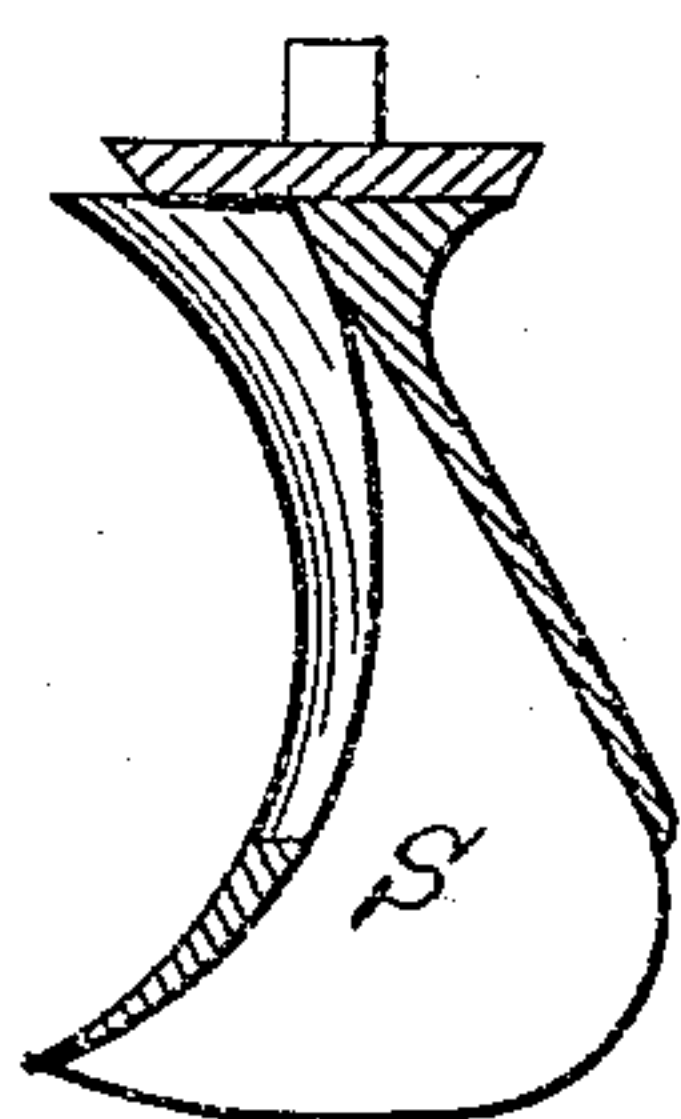
I. S. ALLEN, M. P. BROWN & C. W. MOULTHROP.
Steam Plows.

No. 144,820.

Patented Nov. 25, 1873.



Witnesses.



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2 Sheets--Sheet 2.
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Fig. 3.

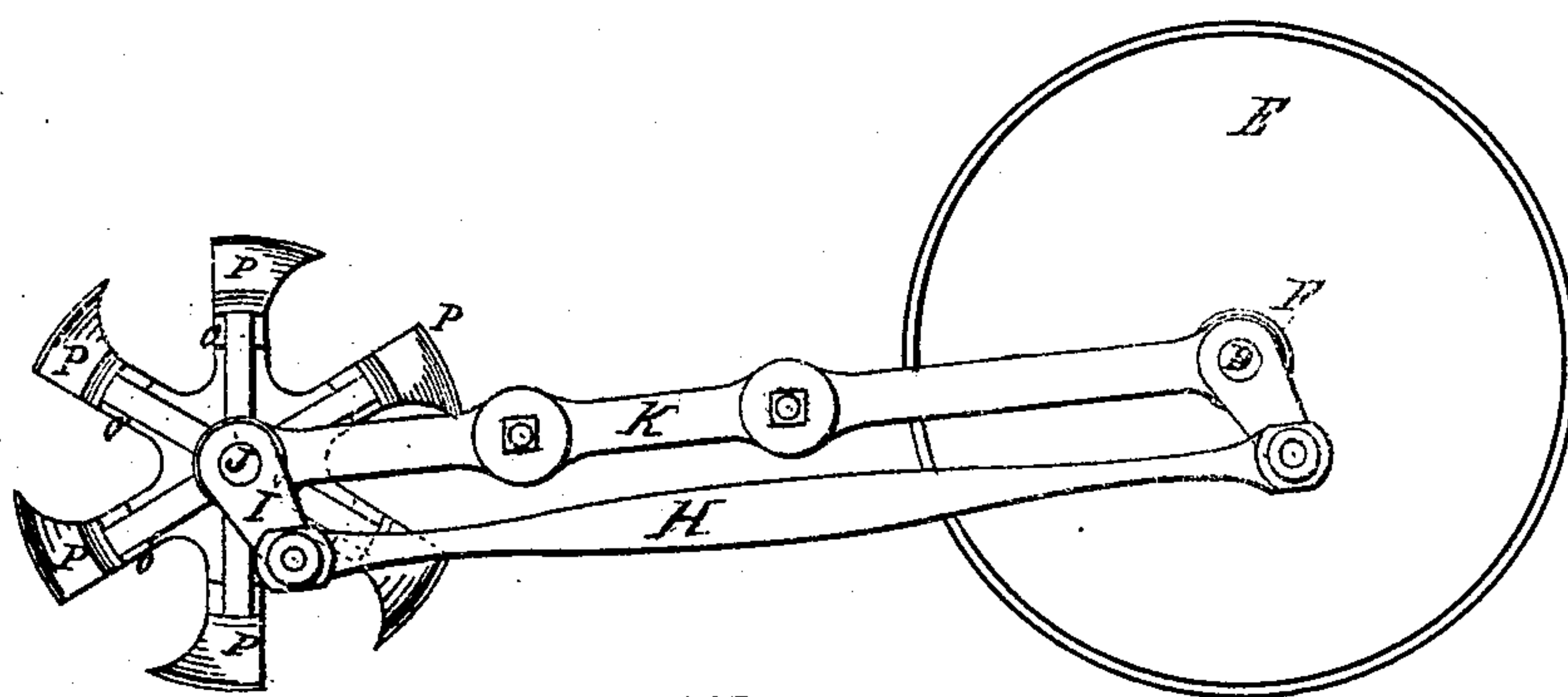
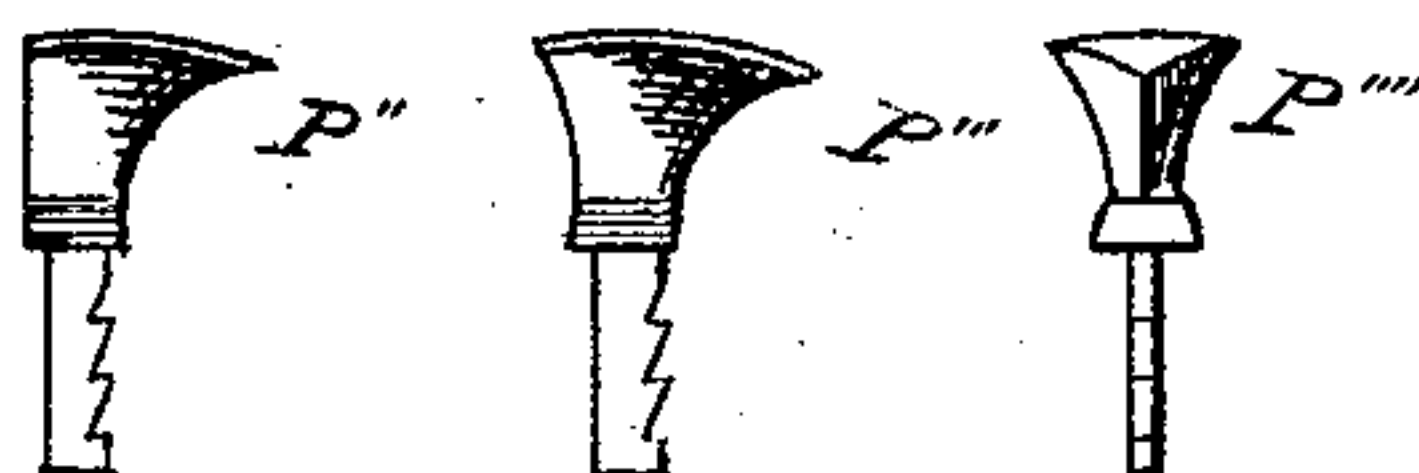
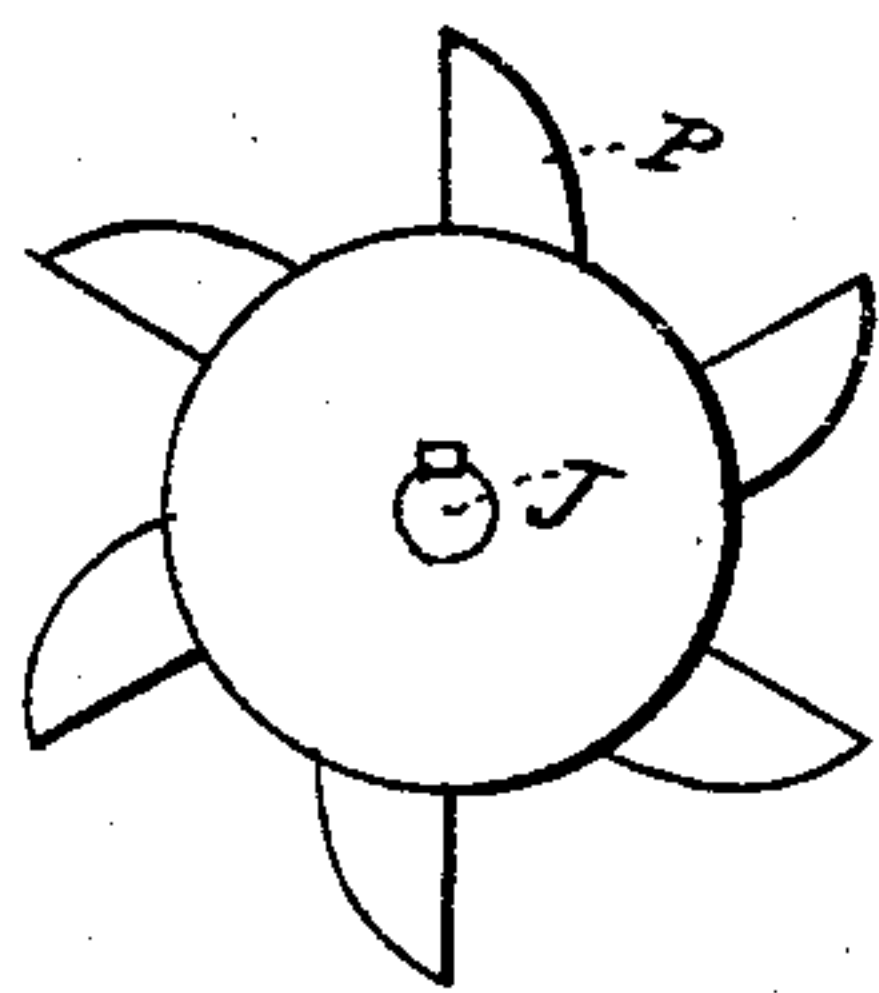
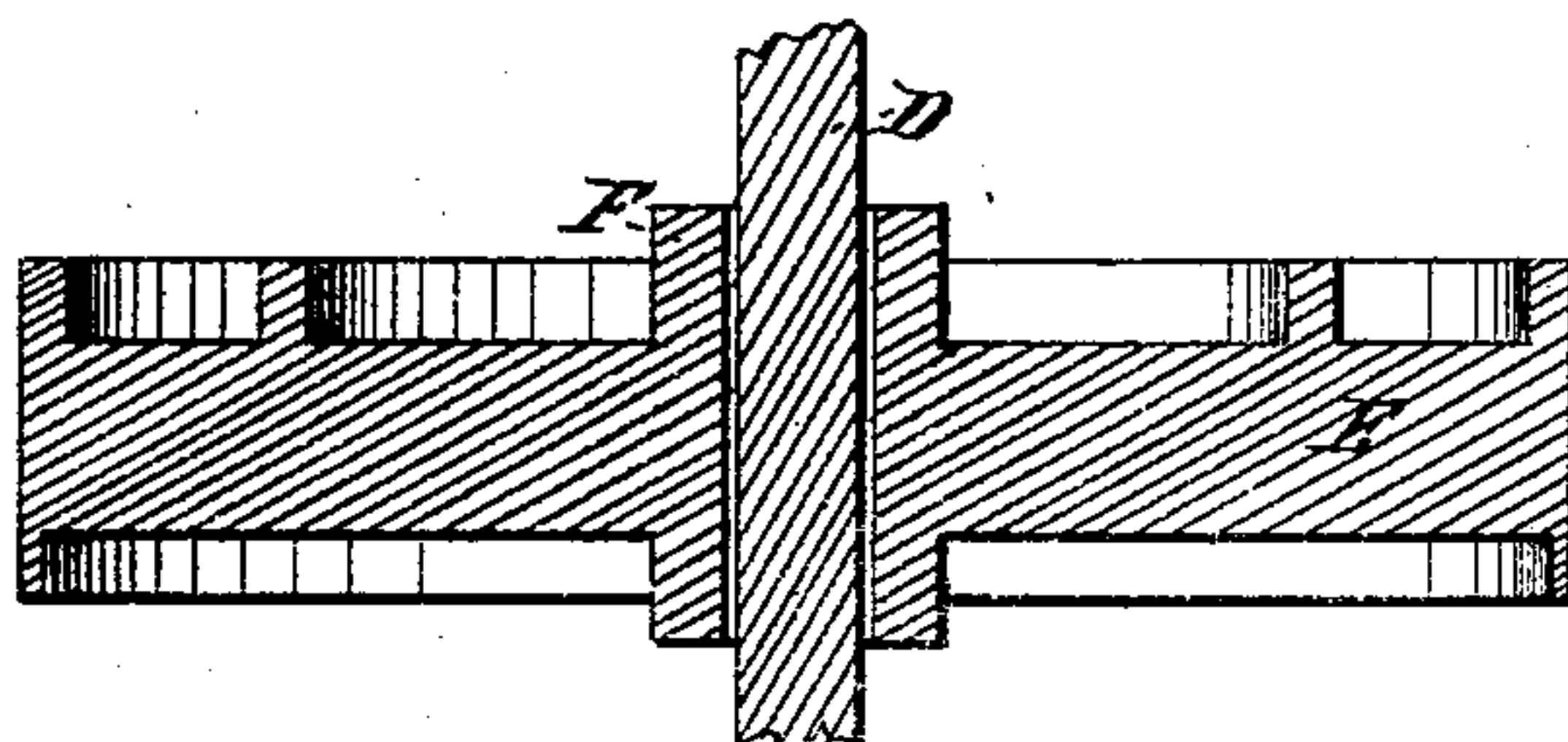


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

ISAAC S. ALLEN, MONTELIUS P. BROWEN, AND CHARLES W. MOULTHROP,
OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN STEAM-PLOWS.

Specification forming part of Letters Patent No. **144,820**, dated November 25, 1873; application filed
February 11, 1873.

To all whom it may concern:

Be it known that we, ISAAC S. ALLEN, M. P. BROWEN, and CHARLES W. MOULTHROP, of San Francisco, in the county of San Francisco and State of California, have invented certain Improvements in Steam Plowing-Machines, of which the following is a specification:

Our invention relates to a class of rotary plow-cutters, and the manner of applying power to the same. In our machine a frame is constructed to carry a boiler and engines. The crank-shaft of the said engines passes through hollow axles of the main traction-wheels, that move the machine over the ground. At the outer ends of the said shaft are cranks, the object of which is to give motion, by means of connecting-rods and additional cranks, to the plow-shaft, the said plow-shaft being placed parallel to the said engine-shaft. The rotary plows may be fastened to a cylinder, or to a number of arms that are keyed to the plow-shaft. The object of our invention is to apply power in as direct a manner as possible to a revolving gang of plows or cutters, giving them, at the same time, a rapid motion of from two hundred (200) to one thousand (1,000) revolutions per minute while the machine is moving over the ground.

Figure 1 is a side elevation of a machine embodying our invention. Fig. 2 is a plan of the same. Fig. 3 is an end view of the plow-shaft and engine-shaft, also one of the connecting-rods and its cranks, with a view of one of the hollow axles. Fig. 4 is a top view of the same, and a section of one of the hollow axles.

A is the main frame of the machine, which should be constructed of wood and iron in a substantial manner, yet without a superabundance of weight. C' C'' are a pair of cylinders, attached, in the usual manner, to the engines. D is the crank-shaft. E E are the traction-wheels, with appropriate gearing to give them the proper motion. F F are the hollow axles of the said traction-wheels. The object of leaving said axles hollow, and sustained on independent bearings, is to allow the engine-shaft D to pass through the said hollow axles, and run without coming in contact with the aforesaid hollow axles. Attached to the outer ends

of the shaft D are cranks G G, that communicate motion by means of the connecting-rods H H and the cranks I I, which are attached to the plow-shaft J, it being, in fact, a parallel motion, similar to that upon the driving-wheels of a locomotive. K is a frame, hinged at one end so that it will swing upon the same center with the shaft D, while its outer end supports the plow-shaft J in suitable bearings. L is a chain for raising and lowering the frame K, and with it the said plow-shaft J, by means of the chain-pulleys at M and hand-wheels, to which are also attached pawls and ratchets at N, for holding the said chain-pulleys when the plows are at the required height. O O' are spiders or arms keyed to the plow-shaft J, upon which are fastened the plow irons, cutters, or knives, either of which, or a combination of the different kinds, are to be used, according to the character of the soil to be plowed. The aforesaid plow irons, cutters, or knives may be attached to a cylinder, constructed of suitable materials, and keyed to the shaft J. P'' P''' are some of the said plow-irons, which have shanks that project inward, and are held by the dovetailed part of their bottoms alone, or in combination with eccentric catches.

For some kinds of plowing we fasten the plow-irons directly to the shaft, the order in which they are distributed over the shaft or cylinder being such that they will form spiral lines running toward the middle of the cylinder or plow-shaft, commencing from each end and running lengthwise, the object being to prevent the soil (when the plows are in motion) from crowding the shaft J either toward one end or the other. The plow-irons are also to be placed in such a manner that their cutting-edges will form angles with radial lines of the cutting circle that pass through their backs or centers, the said cutting-edges being either straight or curved, the design being to make a sharp and clean cut, as nearly as practicable, in the line of motion of the points or edges of the cutters P'' P''', &c.

S is also one of our plow irons or cutters, constructed with side knives, set at a proper angle with the main plow iron or cutter, cutting beyond the same as a colter to facilitate

the work of the plow iron or cutter which follows. The aforesaid plow-iron is also provided with a guard or scraper behind it, set at such an angle as to secure the free delivery of the soil from the machine at the proper point by centrifugal force.

We make no claim to the boiler or engines; but

We claim—

1. The crank-shaft D, with its driving and intermediate gear wheels for giving motion to the traction-wheels, and the hollow axles F F, in combination with the traction-wheels, the cranks G G, connecting-rods I I, and frame K,

for raising and lowering the cutters, substantially as and for the purpose set forth.

2. The combination of the shaft D, through the hollow axles F F, and cranks G G, connected, by the rods H H, to cranks I I and frame K, with shaft J, substantially as and for the purpose set forth.

ISAAC S. ALLEN.

MONTELIOUS P. BROWEN.

CHARLES WESLEY MOULTHROP.

Witnesses:

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