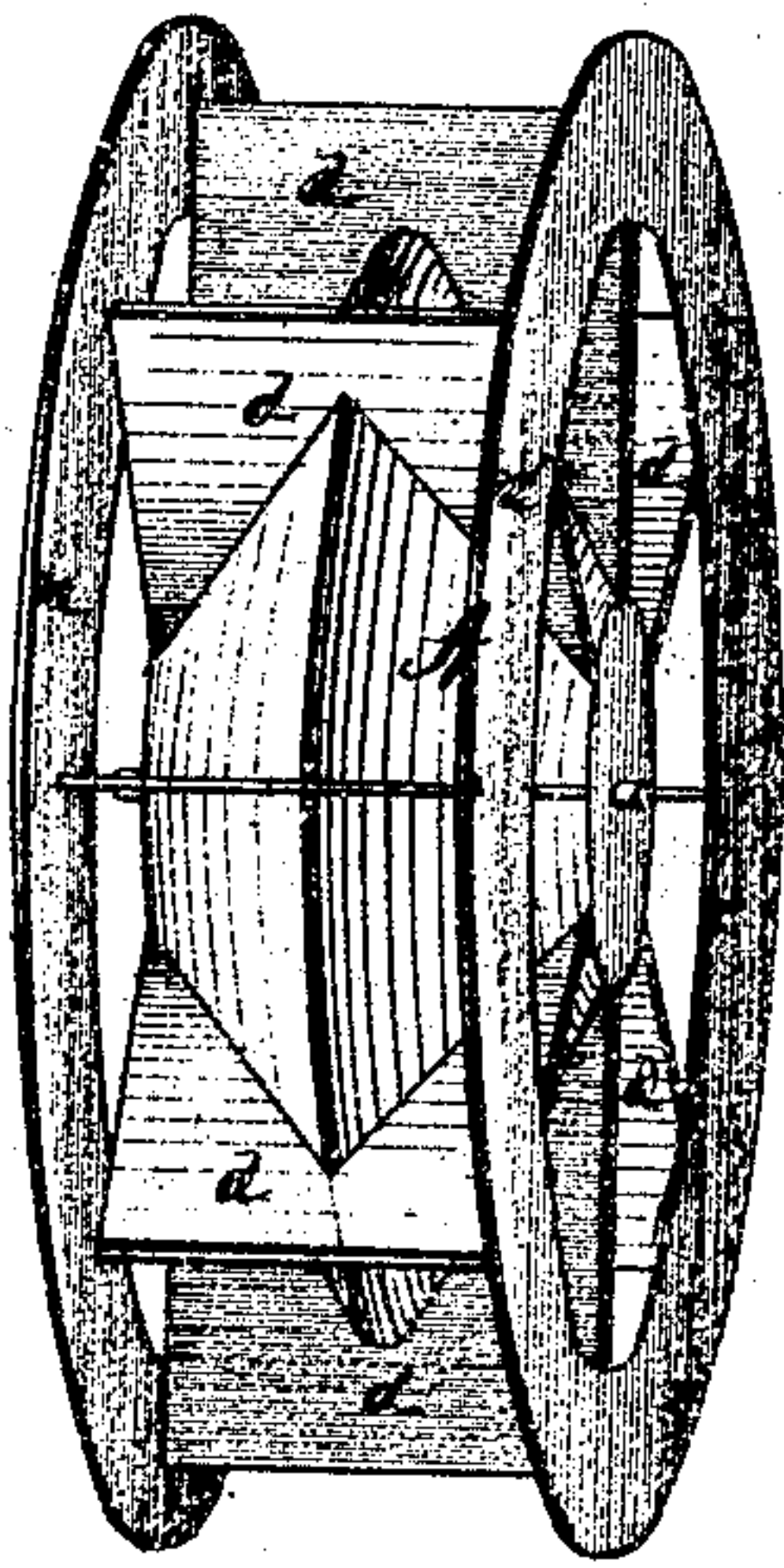
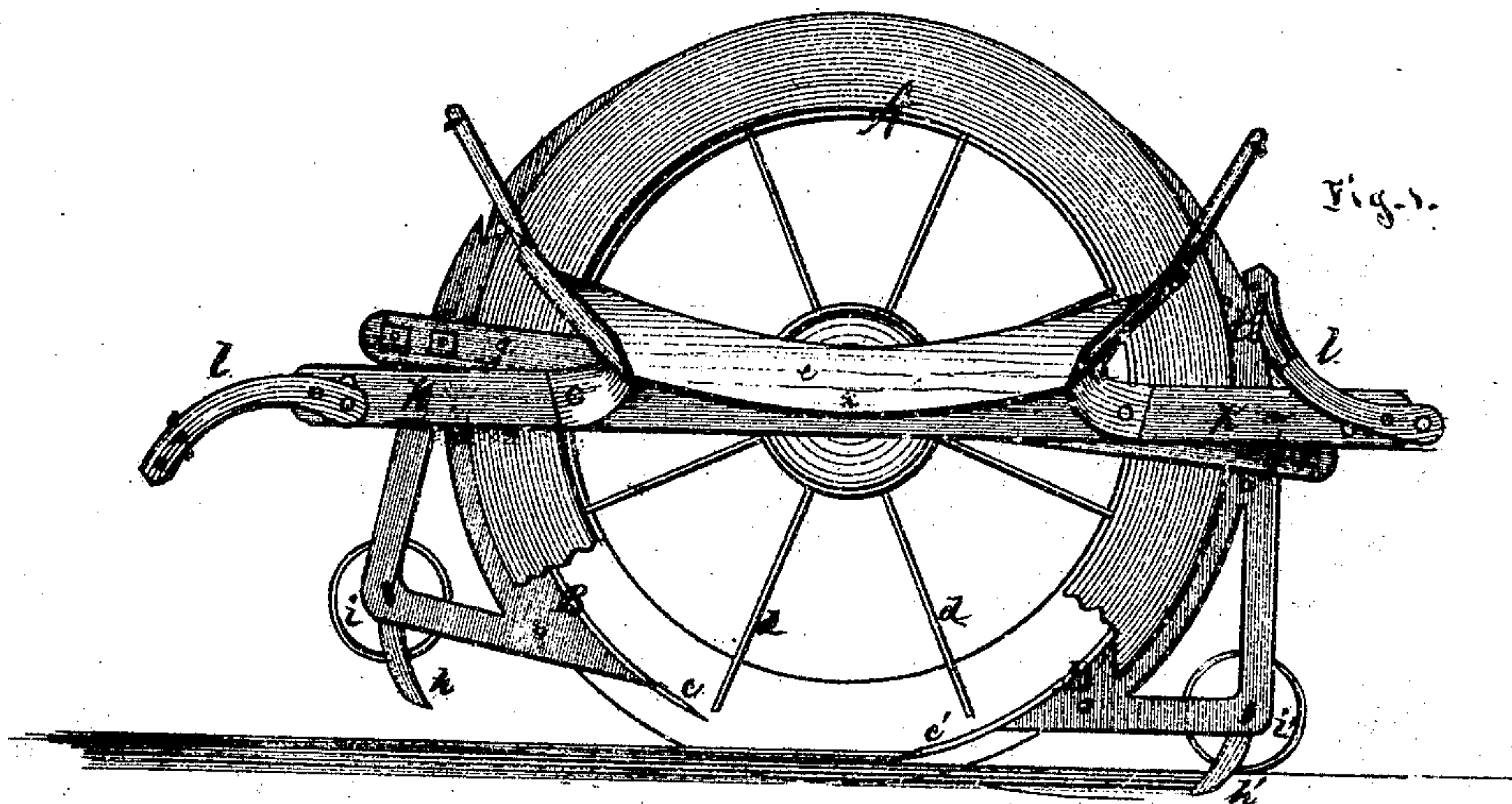


I. Boas,

Excavator.

No. 114,325.

Patented May 2, 1871.



Witnesses.

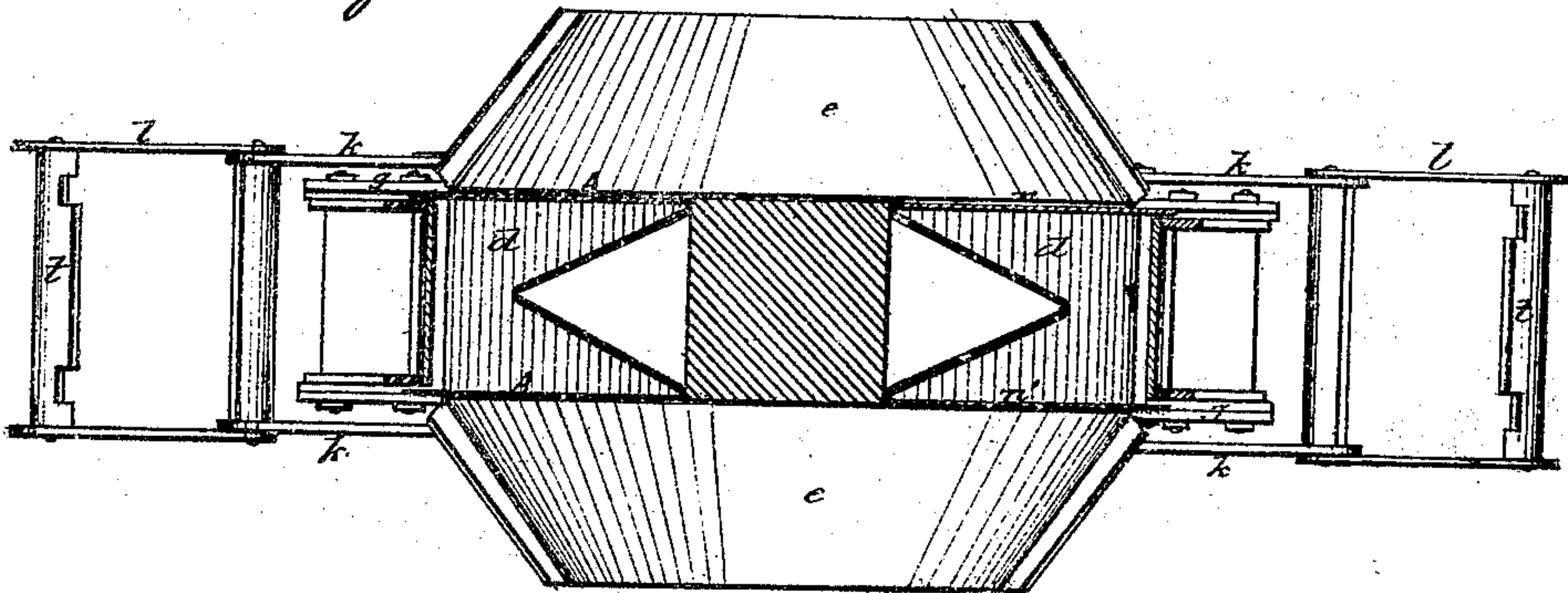
H. A. Jenkins.

C. W. Wailey

Fig. 3.

Inventor.

Isaac Boas



UNITED STATES PATENT OFFICE.

ISAAC BOAS, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. 114,395, dated May 2, 1871.

I, ISAAC BOAS, of the city of New Orleans and State of Louisiana, have invented a new, useful, and Improved Ditching-Machine, of which the following is a correct, clear, and full description, reference being had to the drawing herewith annexed, which constitutes a part of said description and must be taken to illustrate the specification which follows.

In the annexed drawing, Figure 1 is a side view of my ditching-machine as when constructed and completely ready for actual operation and use, showing likewise a portion of one of the rims of the revolving wheel detached or broken away the more clearly to illustrate this specification. Fig. 2 is a perspective view of the main wheel detached from all other parts of the apparatus, wherein are also shown the earth-elevating buckets or blades, and the peculiarly-constructed central part of this wheel, whereby the earth is thrown to both sides of the excavation. Fig. 3 is a horizontal sectional view of the machine, drawn through the same, and on a line a little above the center.

Experience in the use of ditching-machines in the soft alluvial soil of the rich bottom and prairie lands, especially of our Southern States, has proven the absolute necessity of producing a machine which, while it shall fulfill all the required conditions of an efficient apparatus for the purposes intended, shall at the same time be economical in its operations as well as economical and simple in its construction. In my device I have thoroughly accomplished all of the above conditions. For its operation I require no more than two horses or mules, and with one person to drive these I can accomplish more than with any other machine with which I am familiar.

Most of the machines now in use are too heavy and cumbersome, and have too much complicated machinery and gearing to make them practically useful; but my device will be more easily understood by reference to the drawing, wherein the letters indicate the several parts to which reference is made.

My device consists mainly of a double rimmed wheel, as shown at A on the drawing, of a peculiar and novel construction and arrangement, the axle of which supports a double framework surrounding the wheel aforesaid horizontally, and its movement is similar in all respects to an ordinary road-roller. The inner

frame, or that which first surrounds the main wheel, supports the earth-shields B B', on the lower terminuses of which are placed the plow-points or excavators *c c'*. Both the earth-shields and the plows or excavators, the latter being merely a continuation of the former, it will be perceived, are placed between the rims of the main wheel, near the outer perimeters thereof, and serve to prevent the excavated earth, as it is elevated by the wheel blades or buckets, indicated by the letters *d d d d*, from falling from the apparatus until it has reached the point to which it is necessary to elevate the same before it is delivered upon the apron extending from the sides of the outer frame, one of which is shown in Fig. 1 at *e*, and whence it is discharged upon the surface of the ground at the side of the excavation. These aprons could be constructed so as temporarily to retain the earth and allow of its removal by the machine itself to any required place of deposit, and thus serve, for all practical purposes, a self-digging and self-loading machine. The inner frame *g*, aforesaid, also supports, in the manner indicated, the side cutters *h h'*, only two of which are shown, and the wheels *i i'*, which govern or gauge the depth of cutting or excavation. The outer frame *k*, which, like the inner one *g*, is supported, as above mentioned, upon the main axle, constitutes the shafts to which the power for its propulsion is attached. At and upon each end of the shaft-frame there is a frame, *l*, pivoted, as shown, to admit of the elevation or depression of the machine when in operation, and when the power is attached.

It will now, doubtless, be perceived that my device is constructed to operate in opposite directions. When advancing in one direction the front pivoted frame is thrown forward and the rear one is thrown over in the same direction toward the main wheel, and locked to the earth-shield frame, as at *t*. This locking of the two frames in the manner shown and described gives to them their proper relative positions in order to depress the plow, which it is necessary to bring into operation, to the earth to be excavated, and the results sought to be attained produced. The central part of the main wheel is of the form of two frustums of two cones with their bases placed together, and is connected with the outer rims thereof

by the elevating-blades *d d d d*, all of which will be clearly and easily understood by reference to Fig. 2. The blades or buckets *d d* aforesaid relieve the plow or excavator from the excavated earth, raise it to the point of elevation, whence, by its own gravity, it falls to the side aprons *e*, which are inclined so as to freely discharge the earth laterally to the surface of the ground at each side of the cutting or excavation, and sufficiently distant from it to prevent its again falling therein.

I have called my device a ditching-machine, and for this purpose it is mainly intended; but it will be plainly manifest that it is well adapted for all classes of earth excavation. For the purposes for which it is chiefly intended it will be found invaluable, from its durability, simplicity, cheapness, and efficiency.

The outer rims of the main wheel, indicated by the letters *n n'* on Fig. 2, are usually made of boiler-iron, and, being thin and sharp, cut the ground to the necessary or required depth

for the plow or scraper which follows. The cutters *h h* likewise answer the same purpose. The frame-work I usually construct of wood. It can be drawn or moved from one place to another without cutting or plowing the ground simply by adjusting the two frames exactly or nearly parallel to each other.

Claim.

What I desire to secure by Letters Patent is the following:

The combination of the wheel *A*, the frames *g* and *k* with lock-frames *l l*, side aprons *e*, shield *B* with plow-points *c c'*, gauge-wheels *i i'*, and cutters *h h'*, when all these are constructed, arranged, and operated substantially as described, and for the purposes set forth.

ISAAC BOAS.

Witnesses:

H. N. JENKINS,
C. W. WAILEY.