

(No Model.)

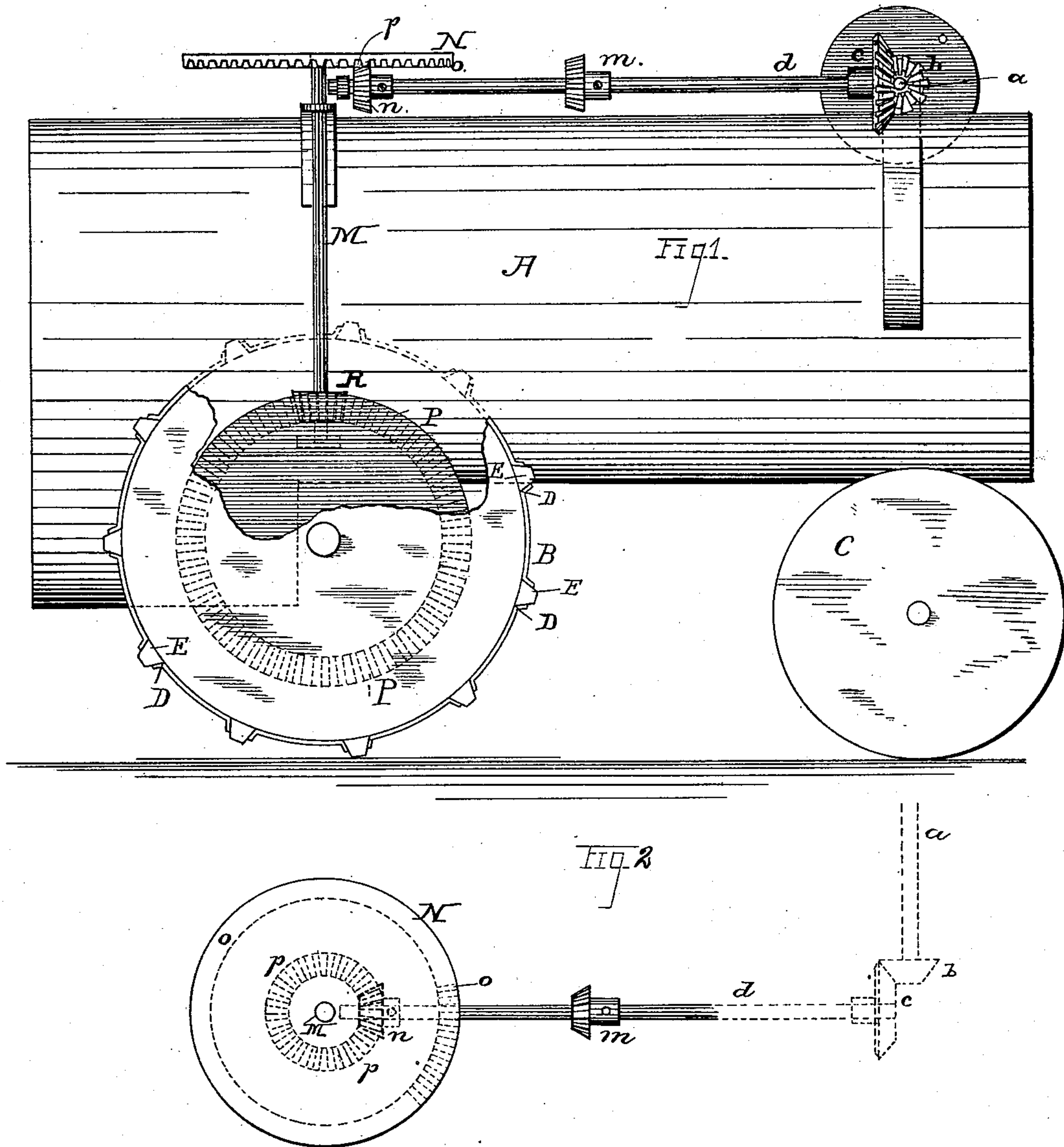
2 Sheets—Sheet 1.

D. LIPPY & J. HUGHES.

TRACTION ENGINE.

No. 261,005.

Patented July 11, 1882.



Witnesses;  
Chas. C. Hill  
Herman Gustow

Inventors;  
David Lippy  
and  
Jacob Hughes  
By their attys.  
Cox & Cox

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Fig. 3.

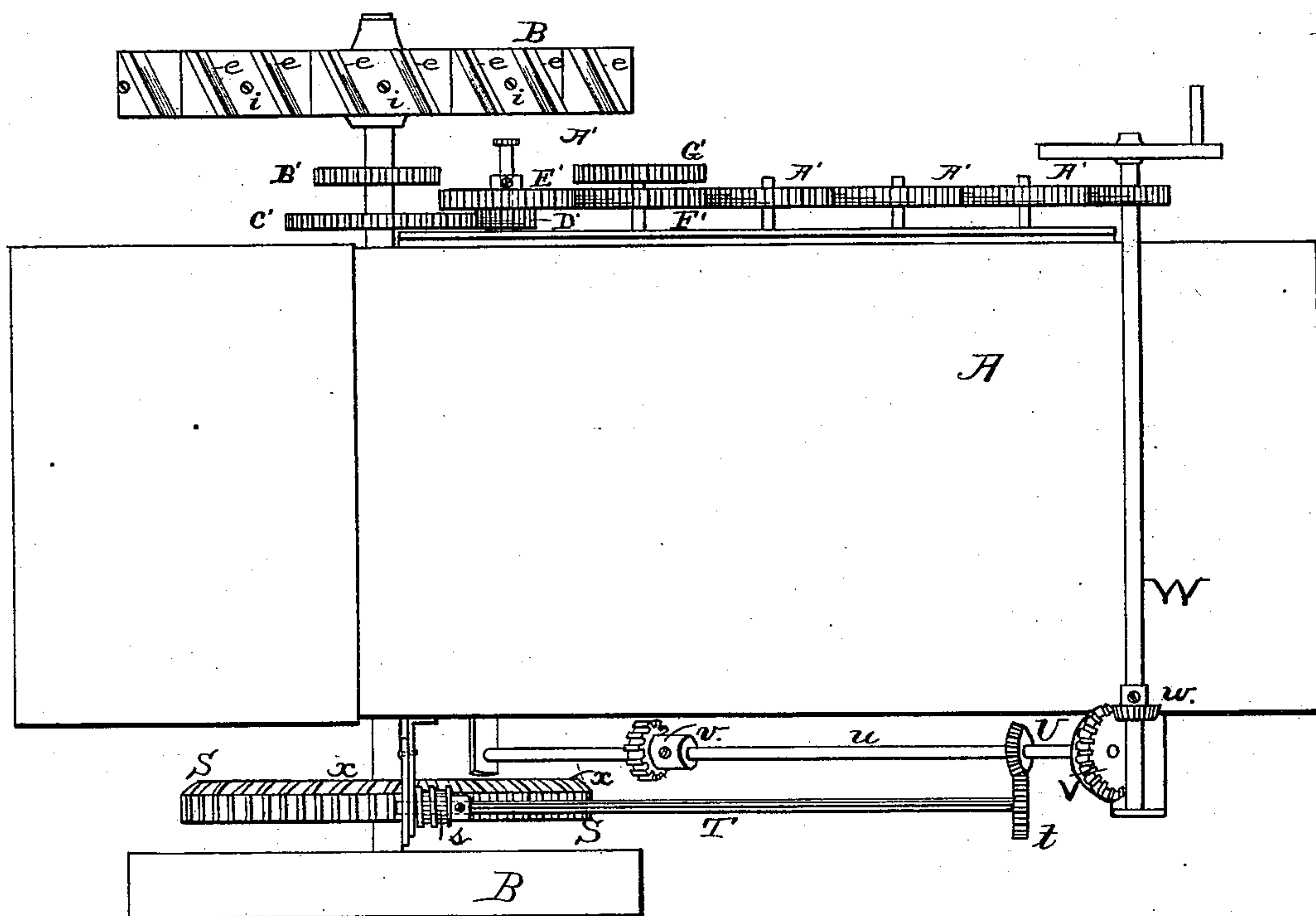


Fig. 4.

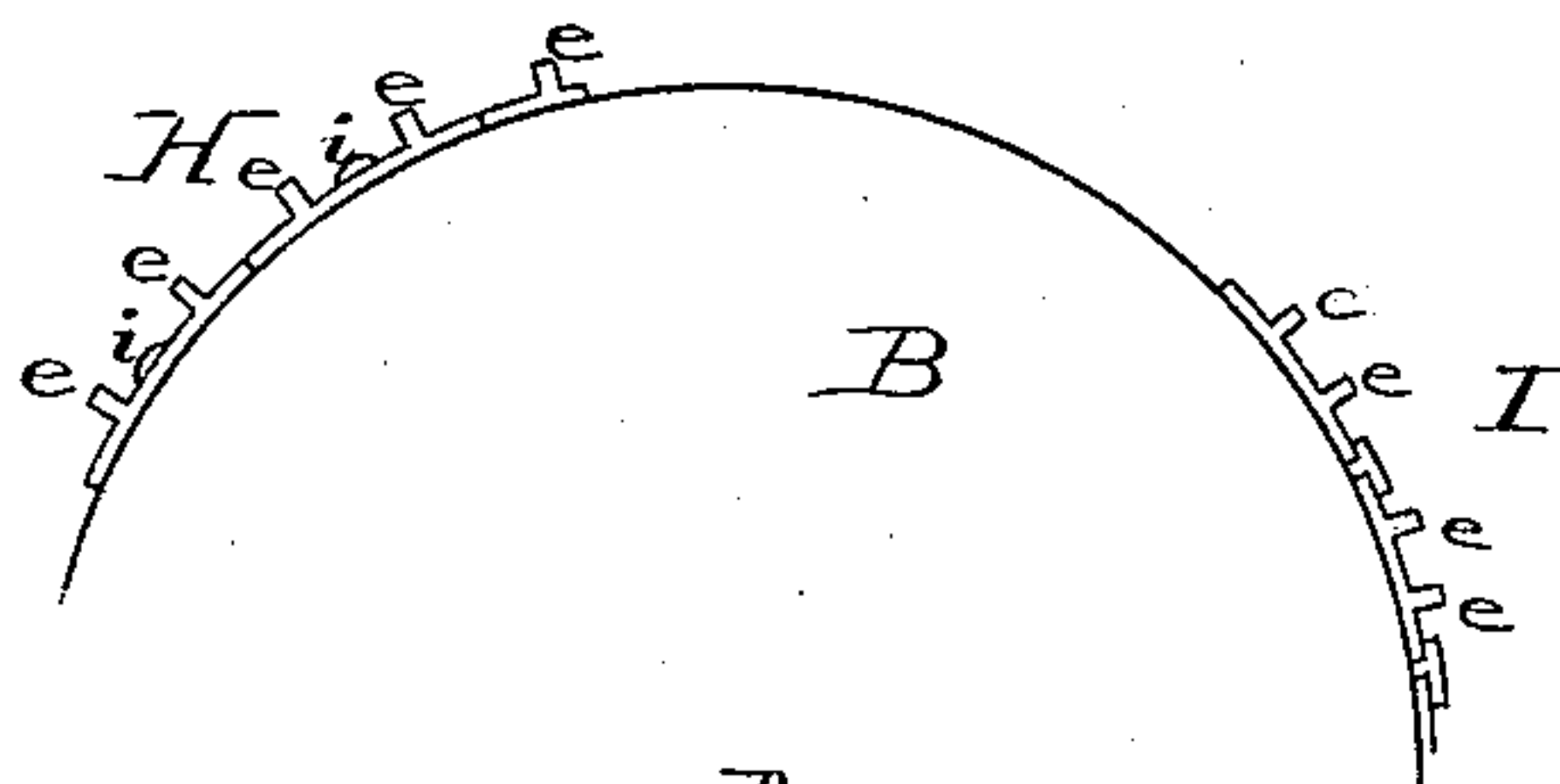
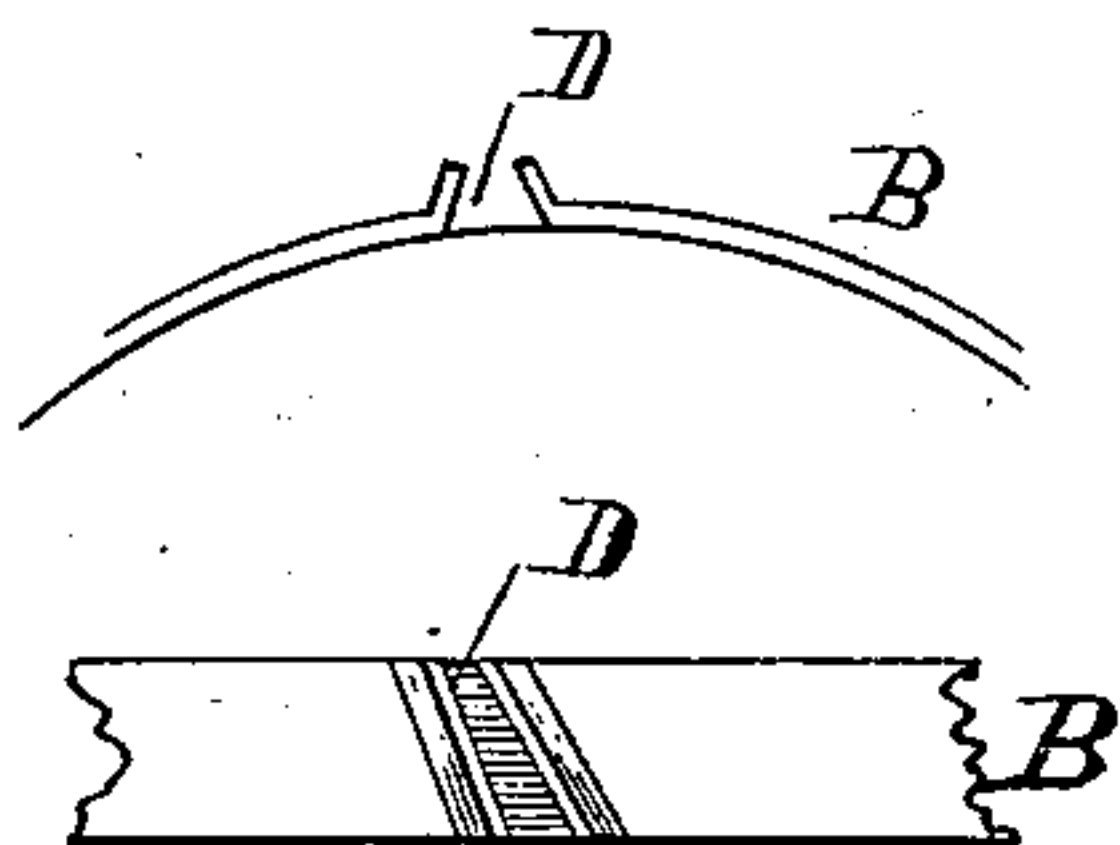


Fig. 5.



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# UNITED STATES PATENT OFFICE.

DAVID LIPPY AND JACOB HUGHES, OF MANSFIELD, OHIO.

## TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 261,005, dated July 11, 1882.

Application filed April 3, 1882. (No model.)

*To all whom it may concern:*

Be it known that we, DAVID LIPPY and JACOB HUGHES, of Mansfield, in the county of Richland and State of Ohio, have invented  
5 a new and useful Improvement in Traction-Engines, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improvement in  
10 traction-engines, and has for its object the ob-  
viation of certain defects which have heretofore  
existed in engines of this class. The first  
of these objects relates to the construction of  
traction-wheels; and it consists in providing  
15 the same with segmental tread-blocks which  
may be removed and replaced at will, and which  
shall have projections of different sizes, accord-  
ing to the nature of the ground to be traversed,  
whereby the wheels are supplied with what  
20 are known as "interchangeable tread-blocks."  
In soft or sandy soil we shall employ the tread-  
blocks having the larger projections, and in  
passing over hard or firm ground we shall use  
the tread-blocks having the smaller projections.  
25 Thus we are enabled to cause the engine to travel  
over soils of various nature without difficulty.  
In the drawings we illustrate various means of  
forming the traction-wheels to accomplish this  
object.

30 Heretofore the traction-wheels of engines  
have been constructed with projections on their  
periphery; but these projections have been all  
of uniform height, and not made so as to be  
readily interchangeable. Thus the engine was  
35 only provided with one set of projections,  
whether traveling over hard or soft soil.

It is well known that engines of the class  
to which the invention relates are with diffi-  
culty made to pass over soft soil without the  
40 aid of teams in addition to their own motive  
power, the difficulty principally arising from  
the fact that in the effort to drive the engine  
ahead the traction-wheels, instead of moving  
on, will simply rotate on their axles. Thus in  
45 this case it is evident that tread-blocks having  
larger projections are necessary, whereas  
should these blocks having the larger projec-  
tions be continuously employed they would,  
when the engine is passing over firm ground,  
50 cause the machine to jar and probably to be  
seriously injured. It will be seen, therefore,  
that the employment of interchangeable tread-

blocks having projections of various sizes is  
extremely desirable, and is quite necessary  
for an engine of perfect construction. The  
exact nature and details of the construction  
55 of these traction-wheels are clearly illustrated  
in the drawings, and will be hereinafter re-  
ferred to.

Figure 1 is a side view of an engine em-  
60 bodying the elements of the invention. Fig.  
2 is a detached top view of part of the gear-  
ing, which will be understood by the letters of  
reference. Fig. 3 is a top view of an engine  
embodying two modifications of the driving-  
65 gear. Figs. 4 and 5 are detached broken views  
of the traction-wheels, which will also be un-  
derstood by the reference-letters.

A indicates the boiler, which is of usual  
construction, and is mounted upon traction-  
70 wheels B and the smaller front wheels, C.

The traction-wheels B are of the usual con-  
struction in all essential respects, with the ex-  
ception of the segmental tread-blocks. In the  
drawings several forms of these tread-blocks  
75 are shown; but the preferred construction is  
that illustrated in Fig. 1. In this construction  
the periphery of the wheel is provided with  
the dovetail-shaped grooves D, arranged at  
regular intervals, in which grooves are placed  
80 correspondingly-formed blocks E, one end of  
the groove and block being made smaller than  
the other, so that the blocks may be wedged  
in their base without difficulty. This manner  
of constructing the traction-wheels permits  
85 the blocks E to be readily removed and re-  
placed by blocks of greater height for use in  
traveling over soft or sandy soil. More than  
one set of blocks will be provided for the trac-  
tion-wheels for use in passing over different  
90 kinds of soil. In traveling over soft soil a set  
of blocks of greater height are inserted in the  
grooves D, so as to increase the hold and fric-  
tion of the traction-wheels on the soil.

In Figs. 3 and 4 are illustrated other methods  
95 of securing the segmental blocks upon the  
periphery of the traction-wheels. One of these  
(lettered H) consists in plates having on their  
faces the projections e. These sections may be  
secured to the wheel by a screw, i.  
100

The segmental block lettered I is similar to  
the block H, with the exception that it is se-  
cured to the wheel by being dovetailed in its  
periphery, or by means of small flanges which



secure its ends. The block I may be additionally secured by a screw, if desired.

We do not limit ourselves to any special means of attaching the blocks to the wheel, the essential consideration being that they shall be in segments and capable of removal and having projections of various heights.

In Fig. 1 the interchangeable means of communicating power to the traction-wheels sought to be protected by this application is shown, and consists of the transverse horizontal shaft *a*, beveled-gear wheels *b c*, connecting with the horizontal shaft *d*, having pinions *m n*, the vertical shaft M, having the wheel N on its upper end, said wheel being supplied with two sets of teeth, *o p*, the shaft M being mounted in brackets and provided on its lower end with a pinion, R, which meshes with the beveled-gear wheel P, rigidly secured upon the axle carrying the traction-wheels. This modification will be clearly understood by reference to the annexed drawings.

The pinion-wheels *m n* are secured upon the shaft *d* by means of a set-screw, so as to be capable of being moved, whereby they may be placed in gear with the teeth of wheels *p o*. In passing over level roads, where it is desired to increase the speed, we place the outer pinion, *m*, in contact with the larger rim of teeth *o*; but when traveling over an elevation, where an increased amount of power is necessary, we displace the pinion *m* and allow the pinion *n* alone to remain in contact with the inner rim of teeth *p*.

When in operation motion is communicated through the transverse shaft *a*, horizontal shaft *d*, the pinion *m* or *n*, and toothed rim *o* or *p* to the vertical shaft M, and thence through the pinion R and beveled gear P to the axle of the traction-wheels. The operation of this gearing is simple and easily understood, but very effectual for the purpose described.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In traction-wheels for engines, interchangeable segments or friction-surfaces provided with projections varying in size, substantially as and for the purposes set forth.

2. The wheel B, having grooves D and interchangeable blocks E, substantially as set forth.

3. In a traction-engine, the shaft *a*, gear-wheels *b c*, horizontal shaft *d*, having pinions *m n*, vertical shaft M, supplied with wheel N, having two sets of teeth, *o p*, the pinion R, and gear-wheel P, mounted on the axle of the traction-wheels, substantially as set forth.

In testimony that we claim the foregoing improvement in traction-engines, as above described, we have hereunto set our hands this 10th day of February, 1882.

DAVID LIPPY.  
JACOB HUGHES.

Witnesses:

THOS. E. BARROW,  
H. D. B. WILLIAMS.