

(No Model.)

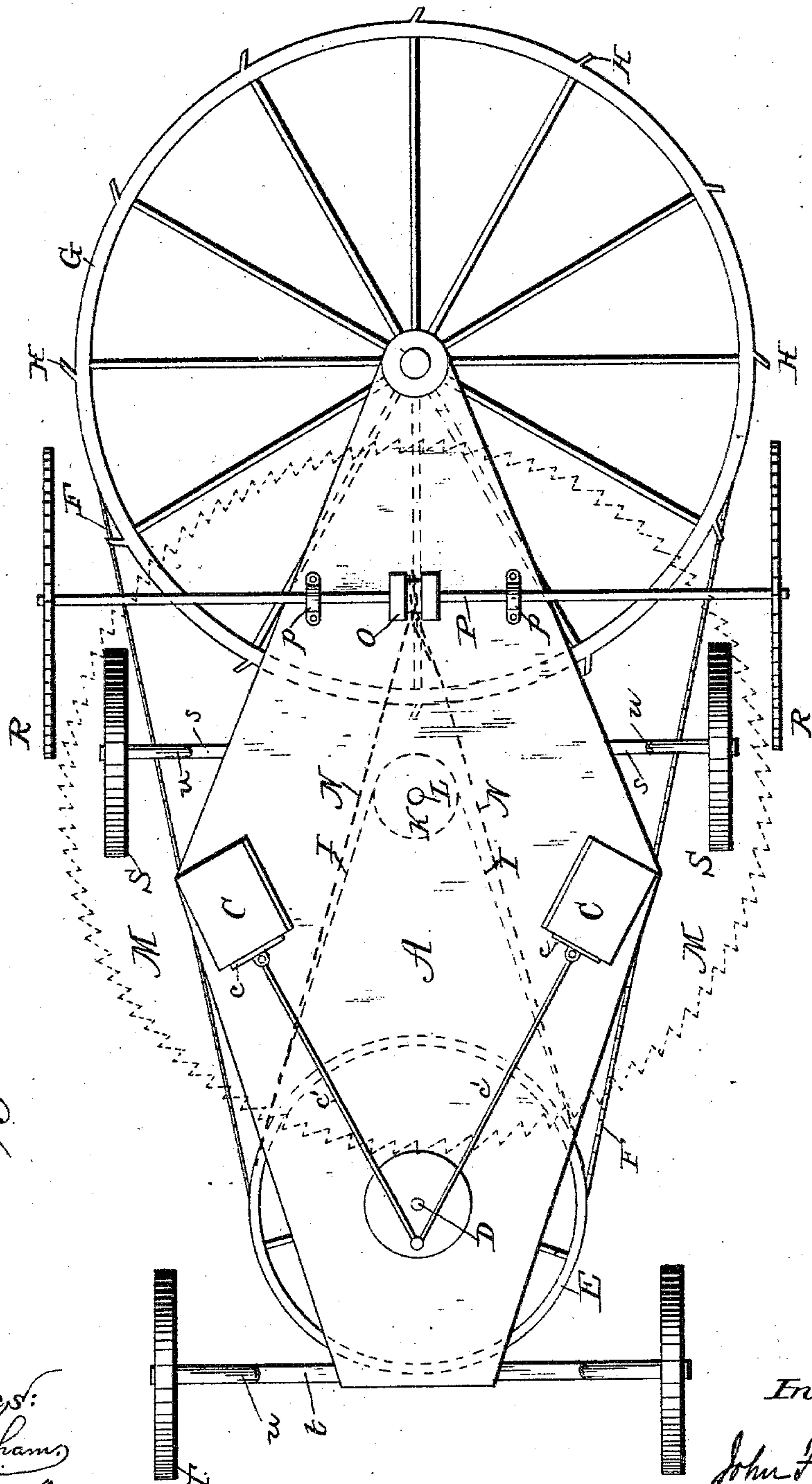
3 Sheets—Sheet 1.

J. F. WHELESS.
COAL MINING MACHINE.

No. 302,969.

Patented Aug. 5, 1884.

Fig. 1.



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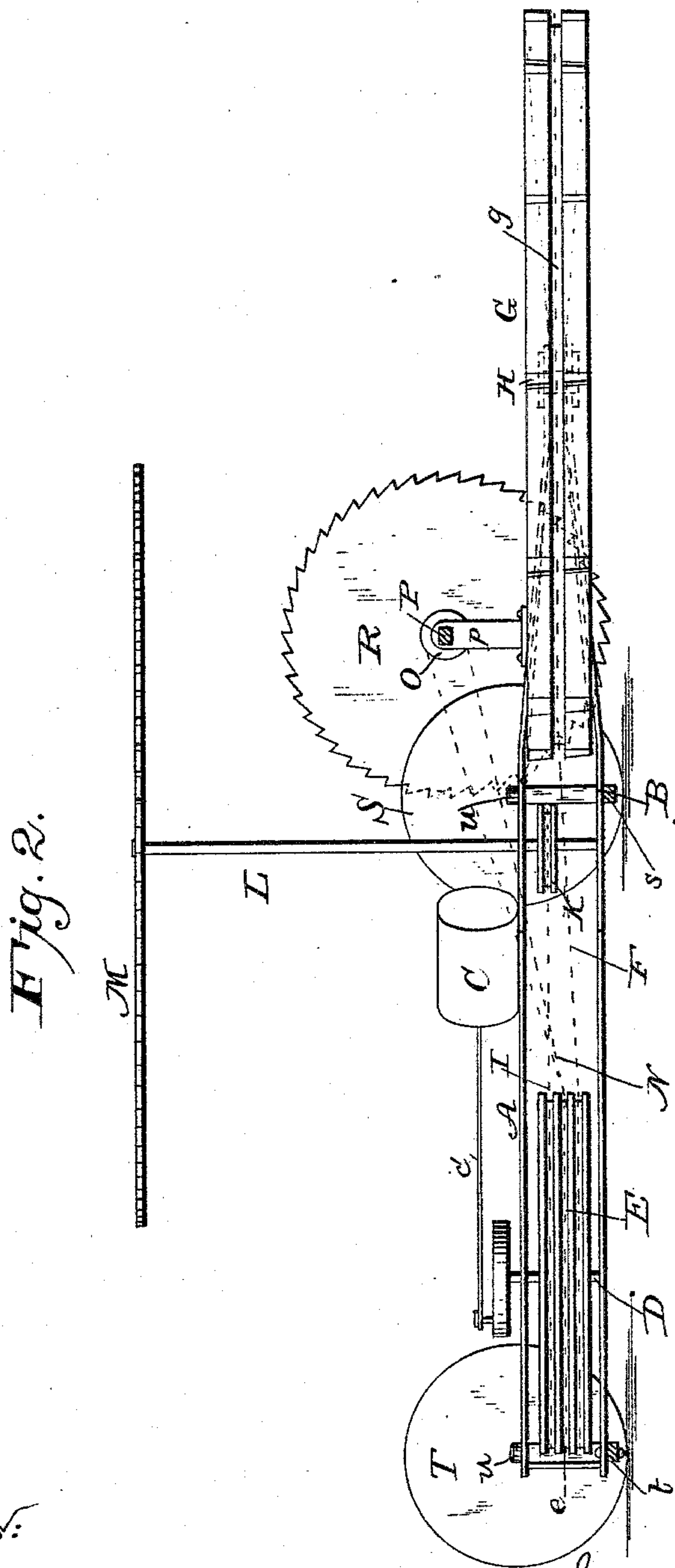
(No Model.)

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J. F. WHELESS.
COAL MINING MACHINE.

No. 302,969.

Patented Aug. 5, 1884.



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(No Model.)

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J. F. WHEELS.
COAL MINING MACHINE.

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Patented Aug. 5, 1884.

Fig. 3.

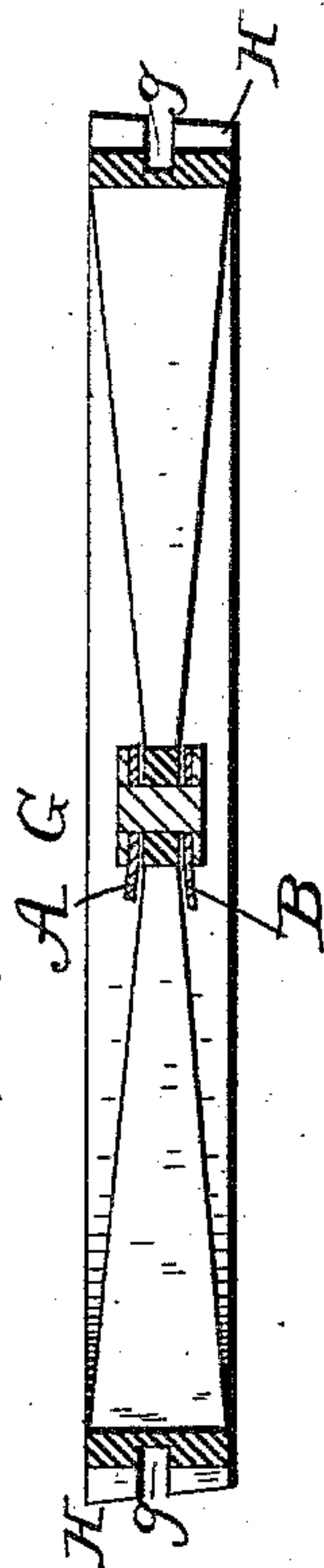
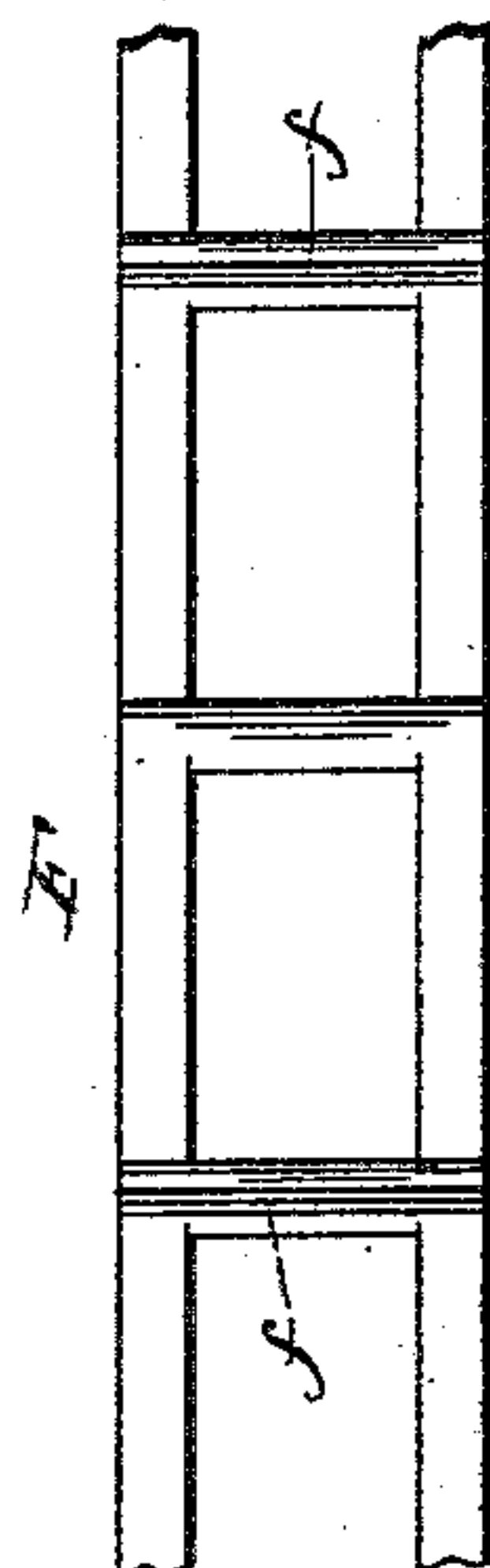


Fig. 5.



Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN F. WHELESS, OF NASHVILLE, TENNESSEE.

COAL-MINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 302,969, dated August 5, 1884.

Application filed April 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. WHELESS, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Coal-Mining Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

15 This invention relates to portable machines for operating on seams of coal; and its objects are, first, to undermine the seam so that the coal may be forced down, and, secondly, to deeply score the face of the seam, so that 20 wedges may be inserted to break and dislodge masses of coal from its bed. These objects I effect by combining a horizontal excavating-wheel with a horizontal circular saw in the manner hereinafter stated.

25 In the accompanying drawings, wherein like letters refer to like parts, Figure 1 is a top plan of the invention; Fig. 2, a side view, partly in section; Fig. 3, a section of the excavating-wheel; Fig. 4, a front view of the 30 band-chain of the excavating-wheel, with projections thereupon, and Fig. 5 a front view of the driving-pulley from which the various parts are operated.

35 A and B are the upper and lower frames of the machine, bolted together by posts of any suitable number, length, and thickness.

Mounted upon the exterior surface of the frame A are twin cylinders C C, having pistons *c c*, to which are pivoted piston-rods *c' c'*, 40 which, by alternating thrusts, continuously revolve the cranked shaft D. The cylinders C C are supplied with steam or compressed air by means of hose or flexible feed-pipes of ordinary construction and arrangement.

45 Upon the crank-shaft D is the large horizontal pulley E, in the rim of which are three parallel grooves, *e e*, each of which carries an endless chain, with oblong links of any familiar construction, which will insure a taut 50 flexible band. The lower chain, F, is carried around the horizontal wheel G in a groove, *g*,

formed in the rim thereof. Above and below this groove on the said rim are vertical cutters H H, the edges of which are set toward the direction in which the wheel is intended 55 to revolve. These cutters are broader at the top than at the bottom, so as to give the cutting-edge an inward slope downward, and thus increase the cutting power at the upper corner of the cutting-edge and to facilitate the 60 escape of the cut material.

In order that the groove in the rim of the wheel may not leave a core in the material operated upon by the double row of cutters, vertical rectangular projections *f* are formed 65 in sufficient number upon links of the chain F to break away the ridge of clay formed in the space between the two rows of cutters, the edges of these projections being flush with the edges of the cutters; but I may prefer to 70 locate these projections upon the bed of the groove *g*, in which event they will be placed and shaped to readily pass through the links as the latter engage with and leave the wheel in a manner easily understood. It will be 75 perceived that in passing in and out between the upper and lower cutters at the ever-shifting tangent points of the wheel, the chain F will be of material service in detaching any clods or particles of clay adhering to the ad- 80 jacent edges of the cutters H H. The wheel G is journaled in the ordinary manner into bearings formed at one end of the frame-work.

In order that the wheel may penetrate far 85 back into the fire-clay underlying the seam of coal, the rim of such wheel which bears the cutting-knives is made considerably broader than the hub or journal is thick, (giving to the spokes of the wheel a fan or oar-blade outline;) and as the frame-plates A and B are bent or 90 sloped toward the hub as closely as the necessity of revolving the wheel will admit, it follows that the excavating-wheel as it operates can almost bury itself in the clay beneath the coal-seam, and thus produce an under-cut 95 which would otherwise require a wheel of greater dimensions. To illustrate: If the wheel shown in the accompanying drawings be assumed to be of five feet diameter, it will penetrate the material excavated almost as far as 100 a ten-foot wheel of equal thickness from rim to hub. The upper band-chain, I, is carried

around the horizontal pulley K and so revolves the vertical shaft L, upon the summit of which is the circular saw M of ordinary construction. This saw is preferably so arranged with reference to the excavating-wheel that its teeth begin to score the face of the coal-seam when the wheel is buried in the cutting a little farther than the hub, this arrangement insuring a sufficiently deep upper and under cut. The middle chain, N, is carried around the vertical pulley O and revolves the shaft P, which is journaled in the brackets *p p* and bears at its ends the vertical circular saws R R. These saws are of such diameter that the teeth are, as nearly as may be, in line with the teeth of the saw M, so that they may operate upon the coal-surface simultaneously and uniformly with that upper saw and will make vertical cuts extending from the upper cut to the under cut.

It is my purpose, by gearing or ungearing the three chains on the pulley E, to operate the excavator-wheel, the top-cut saw and the side-cut saws singly or together; but when the latter are not to be used (by reason of the coal being of too friable a nature to justify side cutting into blocks, as well as under cutting and top cutting) I purpose to temporarily remove the side saws from the axles of the shaft by means of any simple and familiar arrangement adapted to that purpose. The bottom frame, B, rests immediately upon the axle *s* of the pair of hinder wheels, S S, and at the forward end is another pair of wheels, T T, the axle *t* of which is pivoted to the frame in the customary manner, so that said wheels may be turned as needed.

In order to obtain wheels of sufficient size to move easily and rapidly, the axles upon which I rest the machine are hung low and are attached to the wheel-hubs by the vertically-bent arms *u u*, in the manner usual with low-hung axles.

Having thus described my invention, what I claim to be new and useful, and desire to secure by Letters Patent, is—

A coal-mining machine moved upon ordinary carrying-wheels, and consisting in the combination of the frame-plates A and B forming supports or bearings for the various parts of the machine with the steam or air chests C, having pistons *c* and jointed rods *c'* to collect and apply the motive power of said machine, the cranked shaft D, bearing the grooved pulley E, to distribute the motive power to the several cutting wheels or disks of the machine, the endless chains F, I, and N, connecting the driving-pulley with the several revolving shafts upon which the cutting wheels or disks are borne, the shaft L, bearing the top cutter, the shaft P, bearing the side cutters, the pulleys K and O, carrying the band-chains upon the shafts L and P, and the wheel G, (having cutters on the rim thereof,) and the saws M and R, operating simultaneously upon the coal-seam to prepare the same for wedging or blasting, all as hereinbefore described, and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. WHELESS.

Witnesses:

L. K. HORT,
THOS. M. HORT.