

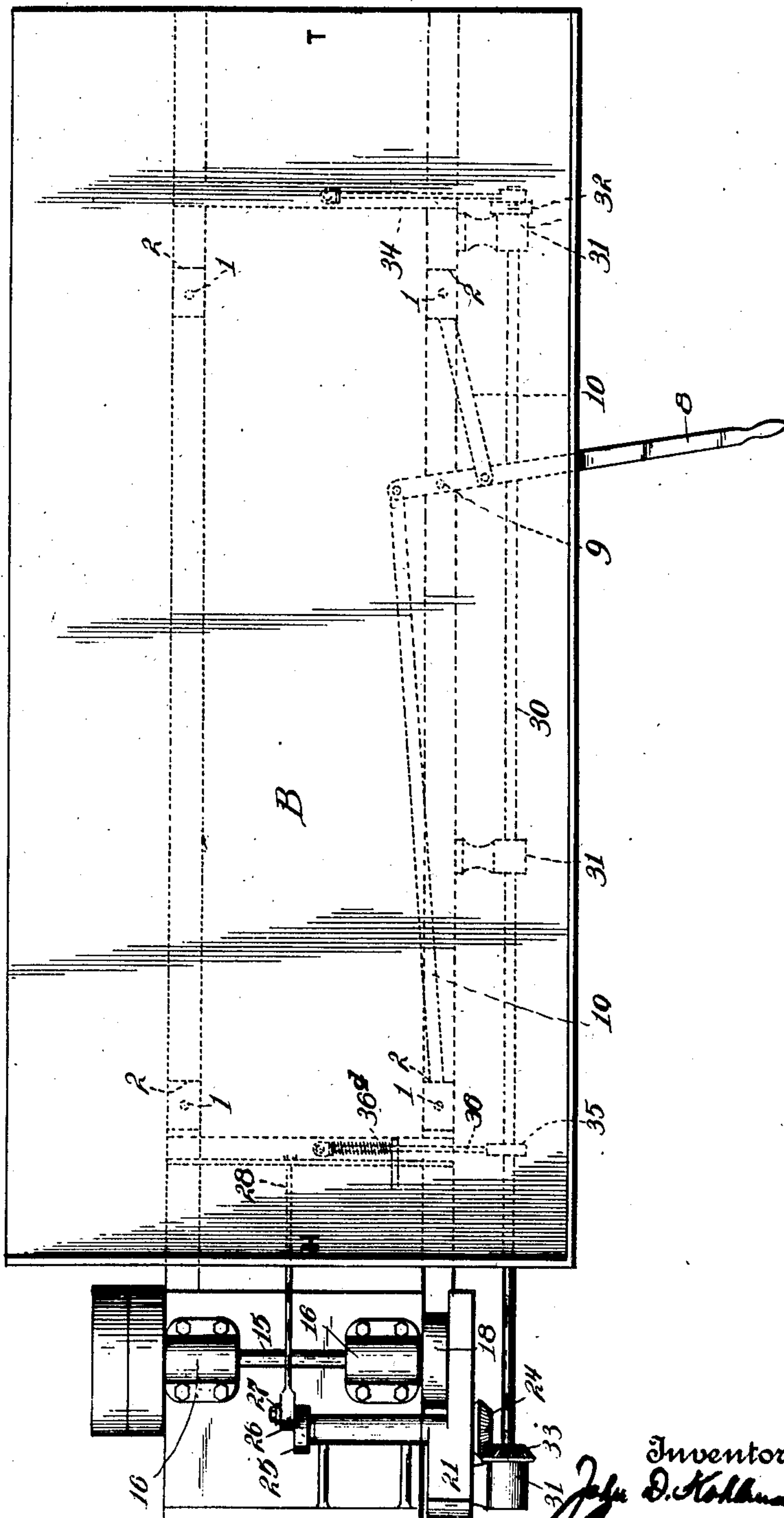
No. 885,349.

J. D. KOHLMANN. P.
CONCENTRATING TABLE.
APPLICATION FILED FEB. 9, 1905.

PATENTED APR. 21, 1908.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Milton L. Lencov

Watts T. Estabrook

Inventor

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No. 885,349.

PATENTED APR. 21, 1908.

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CONCENTRATING TABLE.

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4 SHEETS—SHEET 2.

Fig. 2.

Fig. 3.

Witnesses
 Milton C. Lenoir
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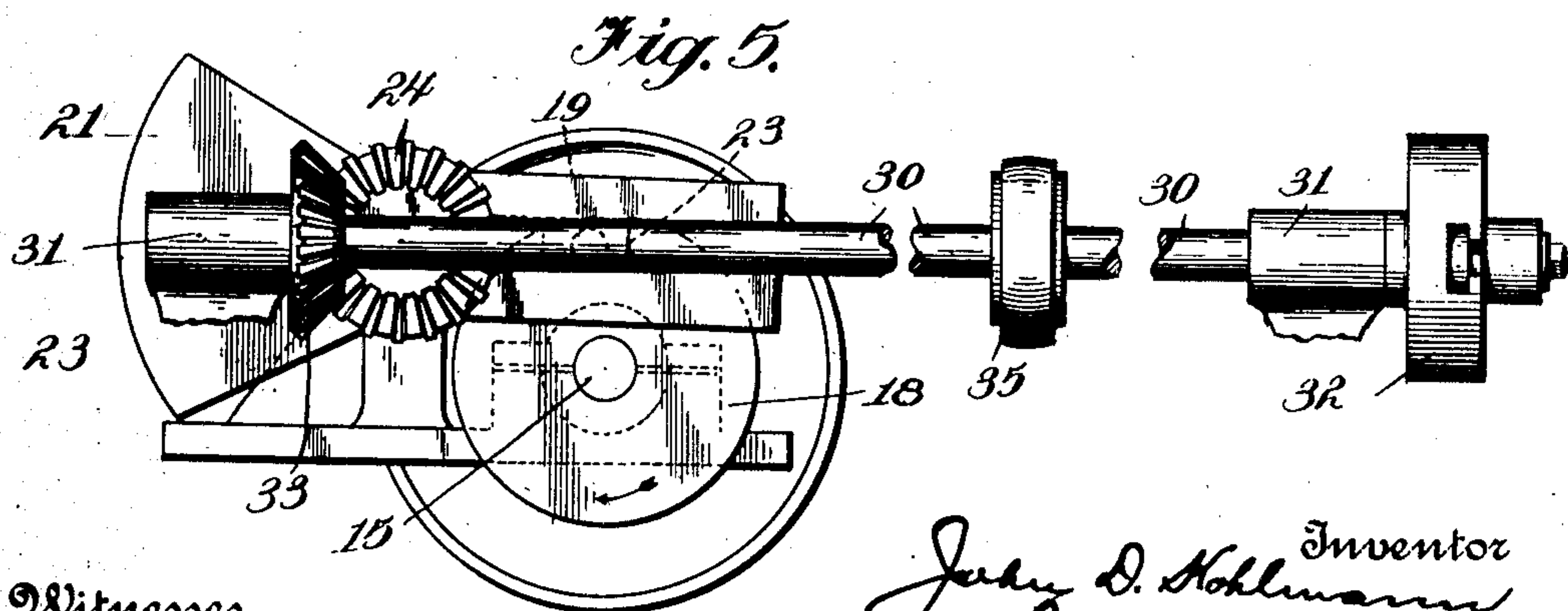
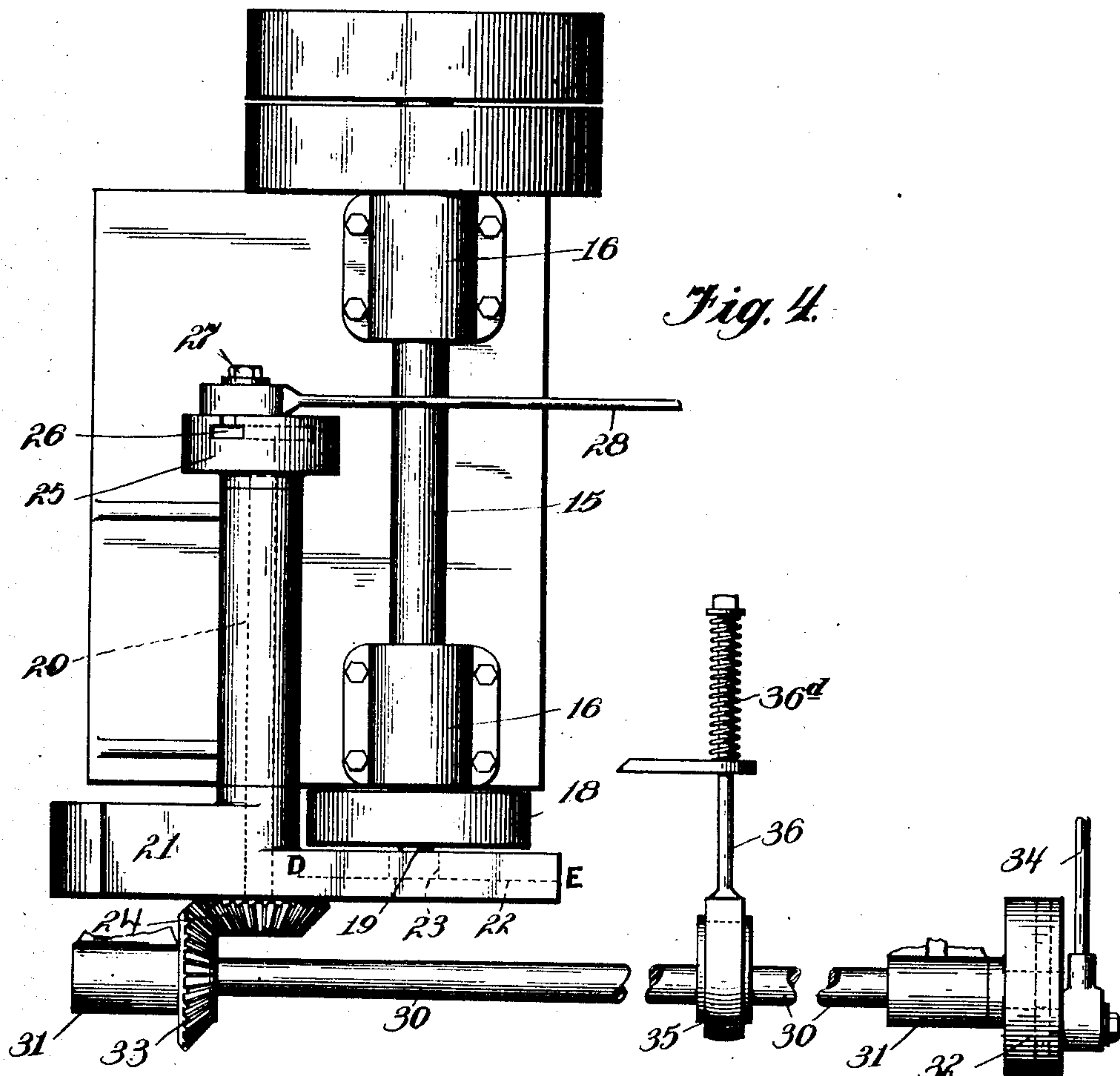
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 6.

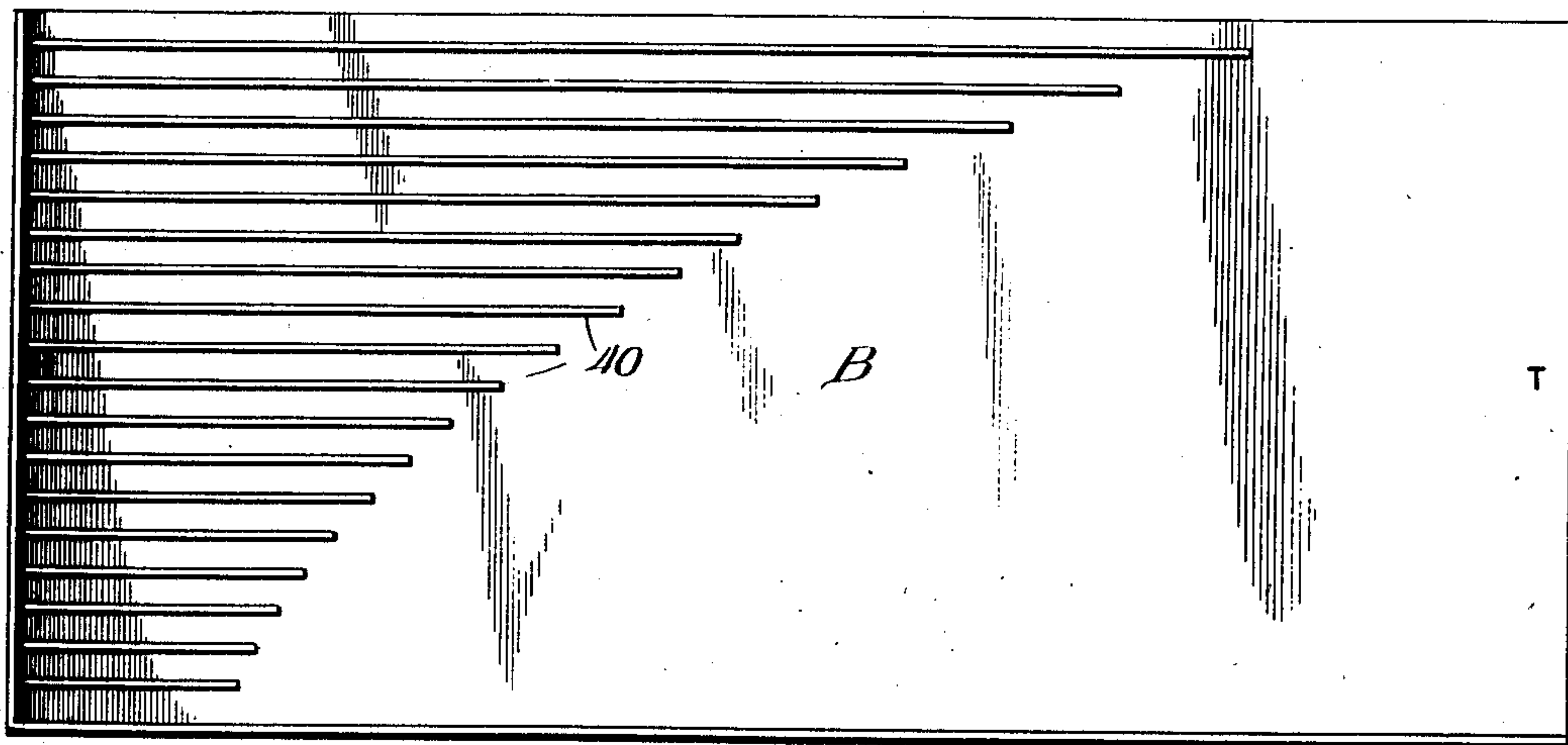
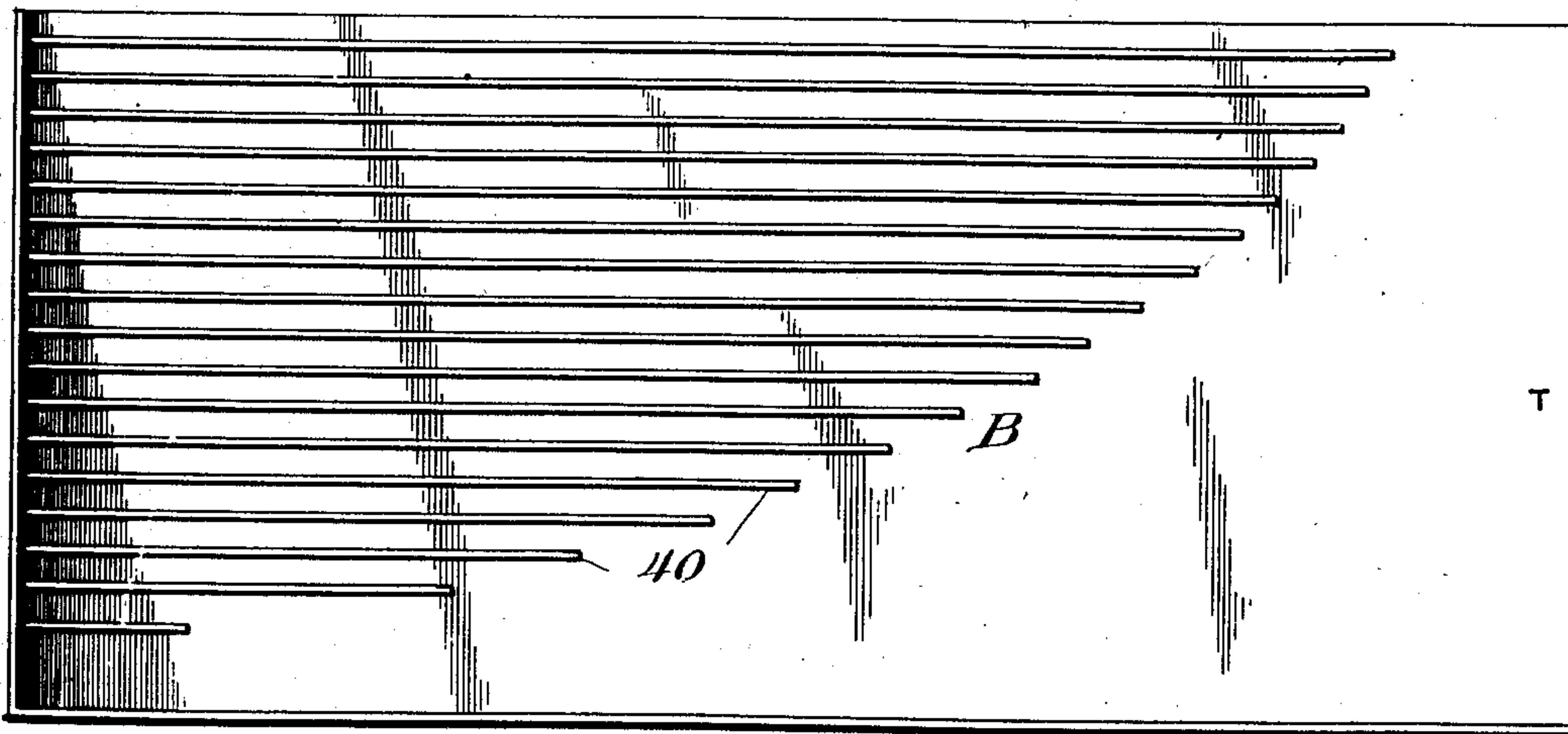


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN D. KOHLMANN, OF MILWAUKEE, WISCONSIN.

CONCENTRATING-TABLE.

No. 885,349.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed February 9, 1905. Serial No. 244,954.

To all whom it may concern:

Be it known that I, JOHN D. KOHLMANN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Concentrating-Tables, of which the following is a specification:

My invention relates to an improvement in concentrating tables, and the object is to provide a table for separating, mechanically, the various minerals, differing from each other in specific gravity, from the rock bearing said minerals, the rock having been previously crushed and reduced to a size best suited for the purpose.

With the foregoing objects in view, my invention consists in a table having either a smooth or riffled surface, resting upon suitable supports, capable of being adjusted from a horizontal to a tilting position and adapted to receive a reciprocatory motion from the end and side whereby the operator is enabled to obtain at will, a motion ranging from a straight-way thrust of variable magnitude in the direction of the length of the table, without side thrust, to a straight-way thrust of variable magnitude at the head end, at the tail end, at both head end and tail end or a combination of either, or both, with the motion in the direction of the length of the table, the various combinations resulting in motions ranging in direction from 0° to 90° with the direction of length of table, any given setting producing a motion of fixed angularity.

My invention further consists in certain novel features of construction and combinations of parts which will be hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view, Fig. 2 is a side elevation, Fig. 3 is an end view, Fig. 4 is an enlarged plan view of the driving gear or head motion, Fig. 5 is a side view of the latter figure on the same scale, and Figs. 6 and 7 are views of two forms of riffles.

A, represents the base or bed of the machine, and B is the table resting upon supports 1, 1, four or six in number. The ends of these supports are spherical and rest in correspondingly shaped sockets 2, 2, on the lower surface of the table, and similar sockets 3, 3, located respectively on the base or bed, and on a bar 5 on the rear side of the machine, thereby permitting any given point on the table to describe a circle, its surface

remaining a horizontal or inclined plane. The bar 5 is provided on its lower surface with oppositely inclined blocks 6, 6 with their inclining surfaces inward or toward each other, and these blocks rest upon oppositely inclined wedges 7, 7, which are capable of being simultaneously thrust outward to raise the edge of the table beneath which they are located, or inward to lower it by swinging the hand lever 8 on its pivot 9, it being connected on opposite sides of its pivot or fulcrum to the wedges by means of connecting rods 10, 10. Stationary abutments 11, 11 on the base or bed prevent endwise movement of the bar 5 by confining the latter between them. In this way, the operator is enabled to tilt the table more or less by actuating the hand lever 8 governing the position of the wedges, the supports 1, 1, two or three in number on the opposite side of the machine serving as the fulcrum, while this adjustment is made or taking place.

The head motion and driving gear for imparting endwise and lateral motion to the table will now be described. A main drive shaft 15 is journaled in boxes 16, 16 at the head end of the table, which end by the way is marked H to distinguish it from the tail end, which is marked T. Fast and loose pulleys are located on one end of the shaft 15, and a crank disk 18 on the opposite end. This crank disk has a wrist-pin 19. A secondary shaft 20 parallel with shaft 15 is journaled a short distance therefrom at the head end of the concentrator, and this secondary shaft is provided with a weighted or balanced lever 21 at one end. This lever has on the shaft side a planed slot 22 extending from the points D to E, said slot receiving the wrist pin 19, and a sliding block 23 which latter fits and slides in the slot while the wrist pin turns in it, the block being bored to fit the wrist or crank pin aforesaid. The opposite side of this lever 21 has a bevel-gear or segment 24 cast or fastened thereon concentric with its axis. The opposite end of the shaft has a crank 25 with a T-slot or dove tail slot 26 formed therein which permits the setting of the crank pin 27 at dead center, at the outer periphery or at any intermediate point, and from this crank pin the connecting rod 28 extends to the table whereby endwise motion is imparted thereto.

From the foregoing it will be seen that as the main shaft revolves and when the sliding block 23 and wrist-pin 19 are in the position

indicated at E a slow motion is being transmitted to the table, but when at D a quick return results.

Running at right angles to the main shaft and parallel to the table is the auxiliary shaft 30, it being journaled in suitable bearings 31, 31. At the tail end of the machine this shaft is provided with a crank 32 similar to the crank 25 previously described, while near its opposite end it is provided with a bevel-gear 33 which meshes with the teeth of the bevel-gear 24 of the secondary shaft 20 from which it derives its motion. From the crank 32 a connecting rod 34 extends to the tail end of the machine, while near the head end of the table, either an eccentric or a lever 35 is secured on the shaft 30 which also transmits motion to the table at the head end in a side direction through the connecting rod 36. A spring 36^d mounted on the connecting rod 36 serves to prevent undue pounding. The three connecting rods 28, 34 and 36 transmit the three motions to the table from the two crank disks and the eccentric or lever, and as these cranks make only a part revolution they produce an oscillating effect.

From the foregoing it will be seen that I provide a table simple in mechanism and producing any and all motions required for mechanical concentration. By suitable adjustment of the crank pin at the tail end of the table such side thrust may be obtained as to permit of separating minerals having different specific gravities, from each other, such as zinc blende from pyrites, etc. While I may use riffles or not, the motion resultant from the side thrust obviates the necessity of having riffles on the table.

In Figs. 6 and 7 I have illustrated tables having riffles 40, 40. The ends of these riffles terminate in points which go to make up a curve, as indicated, which curve may be either a catenary, a parabola or an hyperbola or even a circle, whichever may give the best results for a given work. The origin of the curve may be at the head end or the tail end of the table as illustrated in the two views of the drawings, experiment again determining which is most efficient. Fig. 6 shows the riffles with the origin of the curve at the head end of the table, and Fig. 7 shows a set of riffles with the origin at the tail end.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth, but

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A laterally inclined and differentially reciprocating table adapted to discharge concentrates at one end and gangue over the side, in combination with a driving shaft, a secondary shaft imparting a direct reciprocating motion to the table independent of lateral motion, means for transmitting motion to the secondary shaft, an auxiliary shaft, and an independently adjustable arm connected therewith and with the table for imparting lateral motion to said table.

2. In combination, a laterally inclined and differentially reciprocating table adapted to discharge concentrates at one end and gangue over the side, a driving shaft, a secondary shaft imparting a direct reciprocating motion to the table independent of lateral motion, means for transmitting motion to the secondary shaft, an auxiliary shaft, and independently adjustable means connected with the latter and with the head and tail ends of the table, respectively, for imparting lateral motion.

3. In combination, a laterally inclined and differentially reciprocating table adapted to discharge concentrates at one end and gangue over the side, a driving shaft, a secondary shaft imparting a direct reciprocating motion to the table independent of lateral motion, means for transmitting motion to the secondary shaft, an auxiliary shaft, gears on the secondary and auxiliary shafts, and independently adjustable arms connected with the auxiliary shaft and with the head and tail ends, respectively, of the table, for imparting lateral motion.

4. In combination, a laterally inclined and differentially reciprocating table adapted to discharge concentrates at one end and gangue over the side, a driving shaft, a secondary shaft imparting a direct reciprocating motion to the table independent of lateral motion, a balanced slotted lever on the secondary shaft engaging a crank disk on the driving shaft, an auxiliary shaft, a gear thereon meshing with a gear on the secondary shaft, and an independently adjustable arm connected with the auxiliary shaft and with the table, for imparting lateral motion thereto.

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

JOHN D. KOHLMANN.

Witnesses:

J. S. BRODHEAD,

F. G. HOLTMAN.