

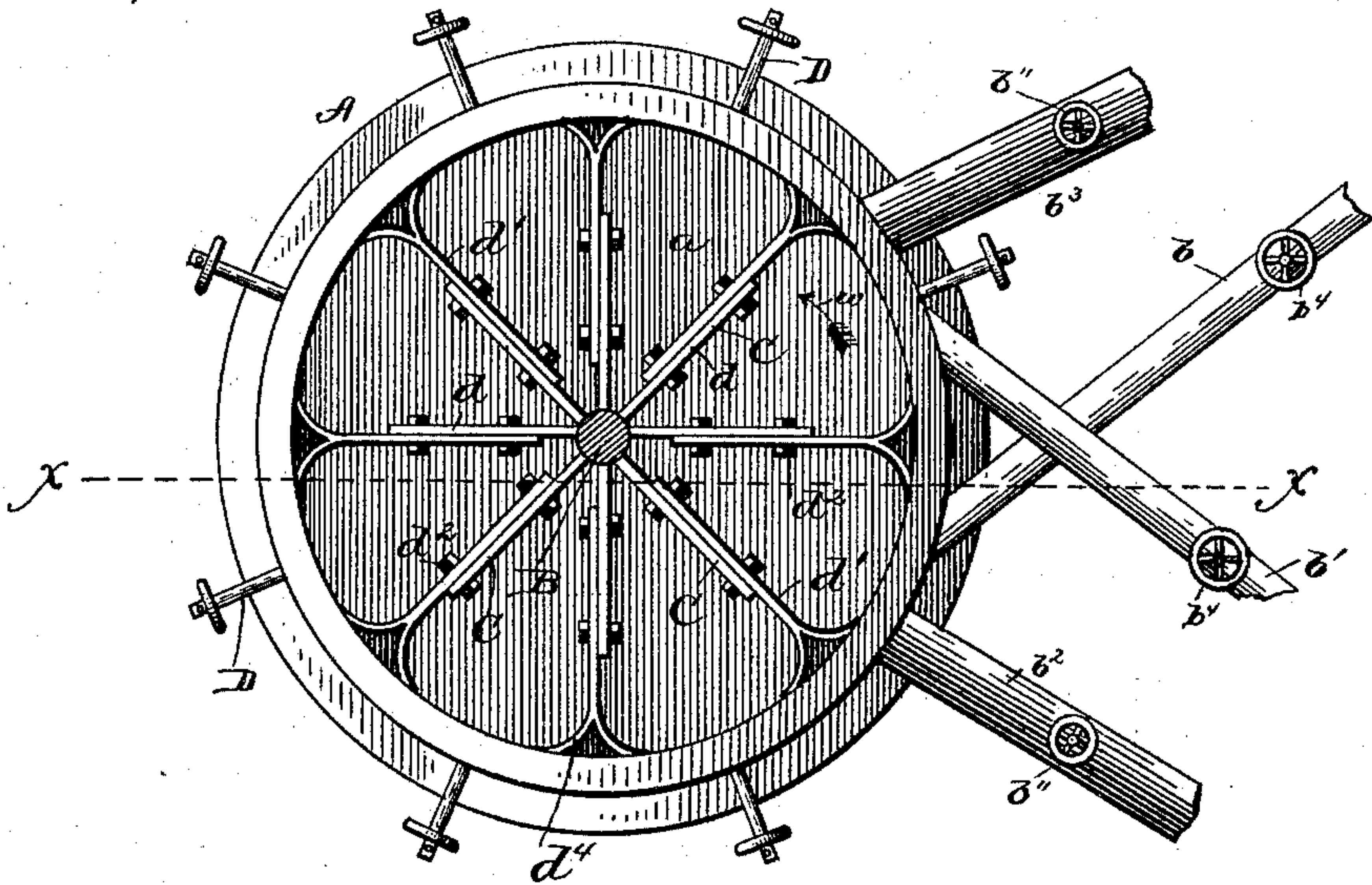
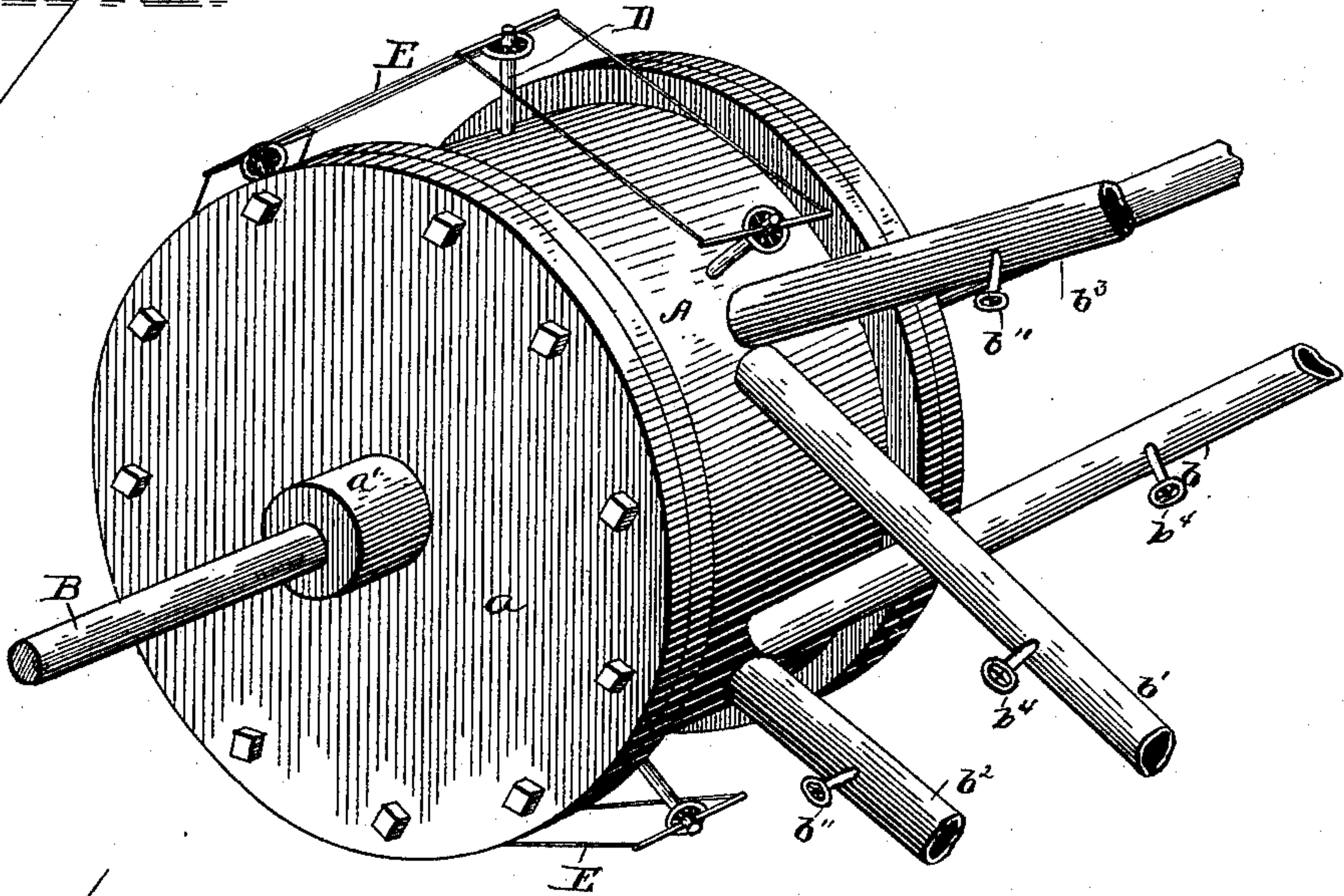
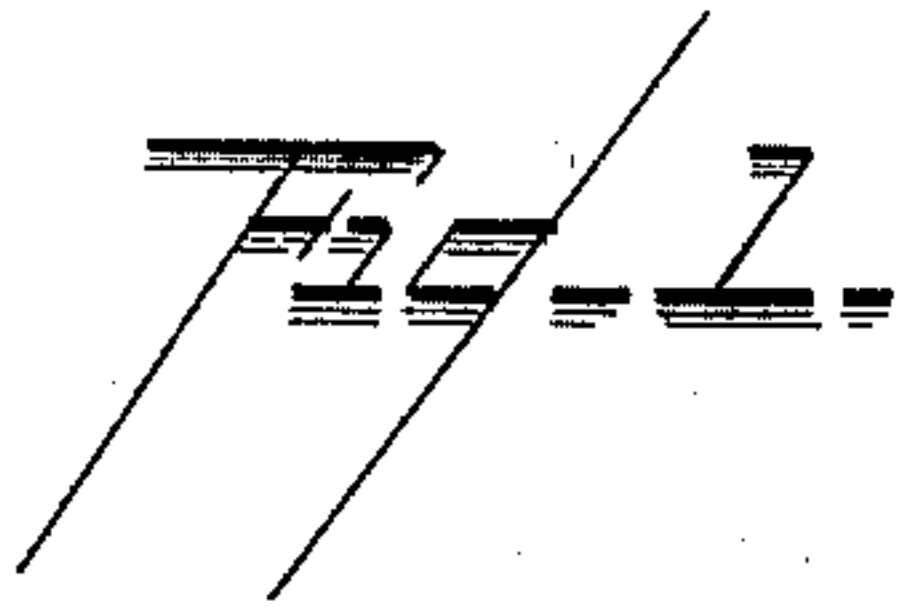
(No Model.)

3 Sheets—Sheet 1.

C. MINDT.
ROTARY ENGINE.

No. 396,759.

Patented Jan. 29, 1889.



WITNESSES.

Edwin T. Yewell,
Wm. J. Little,

INVENTOR

Carl Mindt,
by J. R. Littell
Attorney

(No Model.)

3 Sheets—Sheet 2.

C. MINDT.
ROTARY ENGINE.

No. 396,759.

Patented Jan. 29, 1889.

Fig. 3.

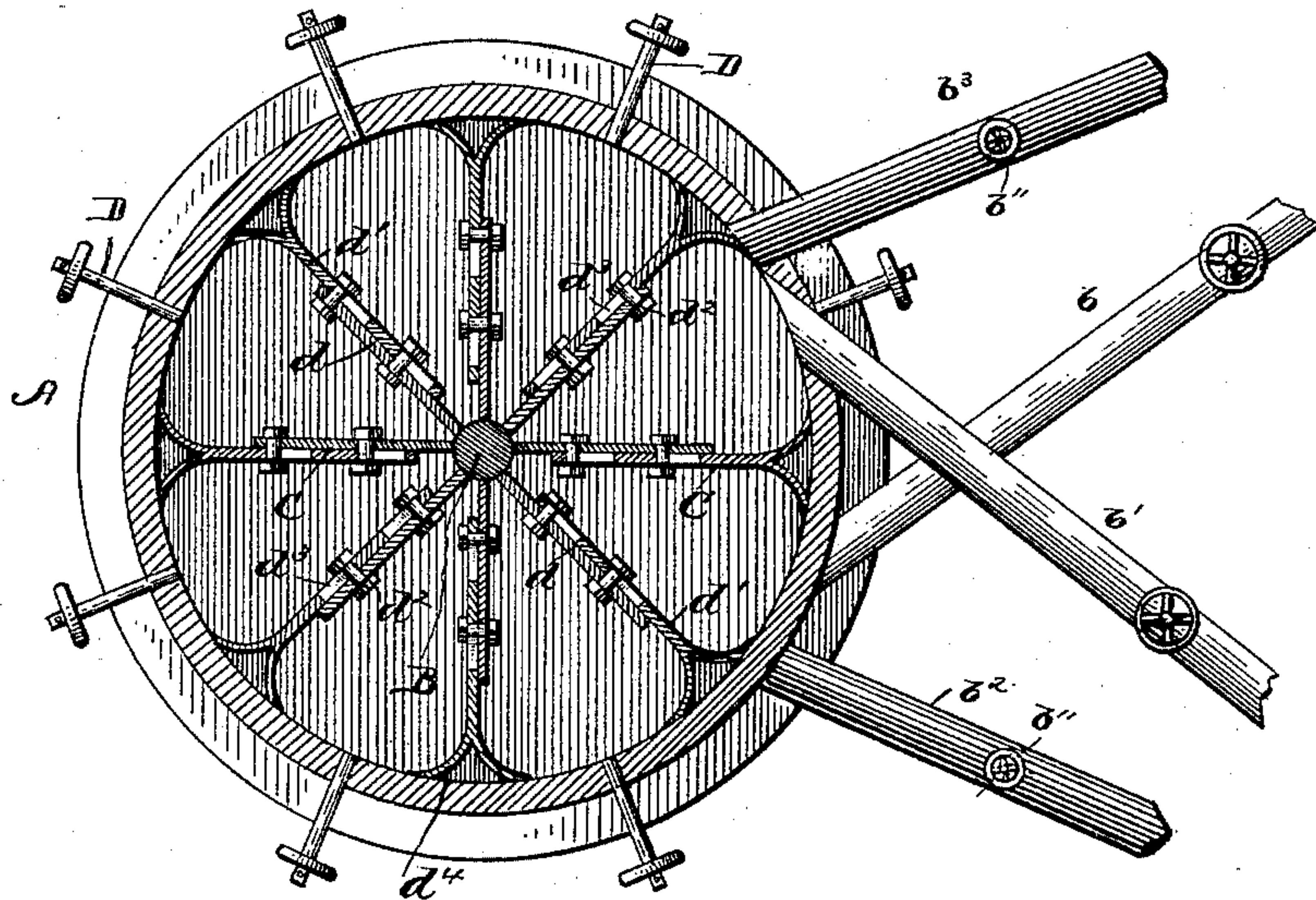
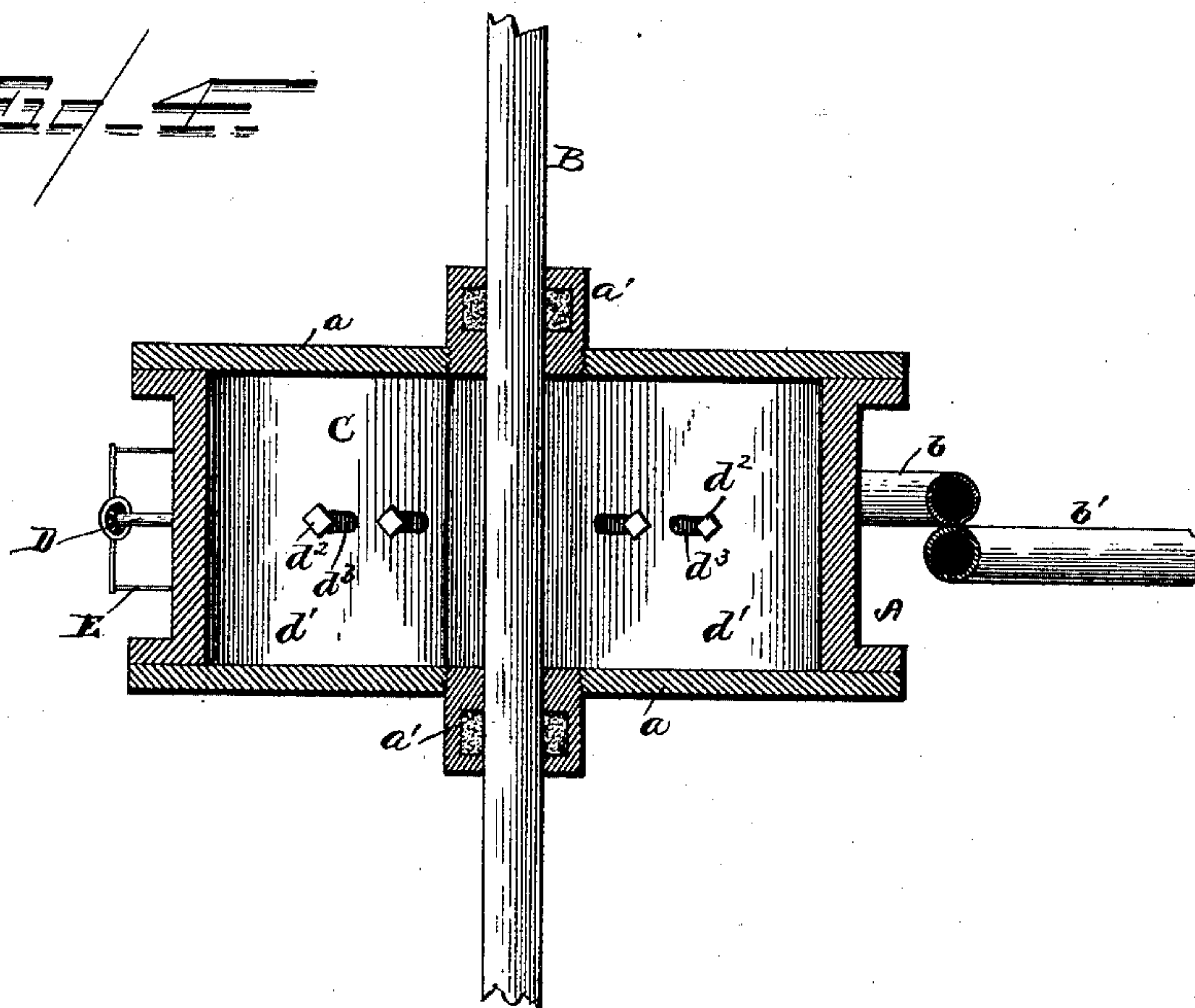


Fig. 4.



WITNESSES.

Edwin I. Jewell
Am. J. Littell,

INVENTOR.

Carl Mindt
by J. R. Littell
Attorney

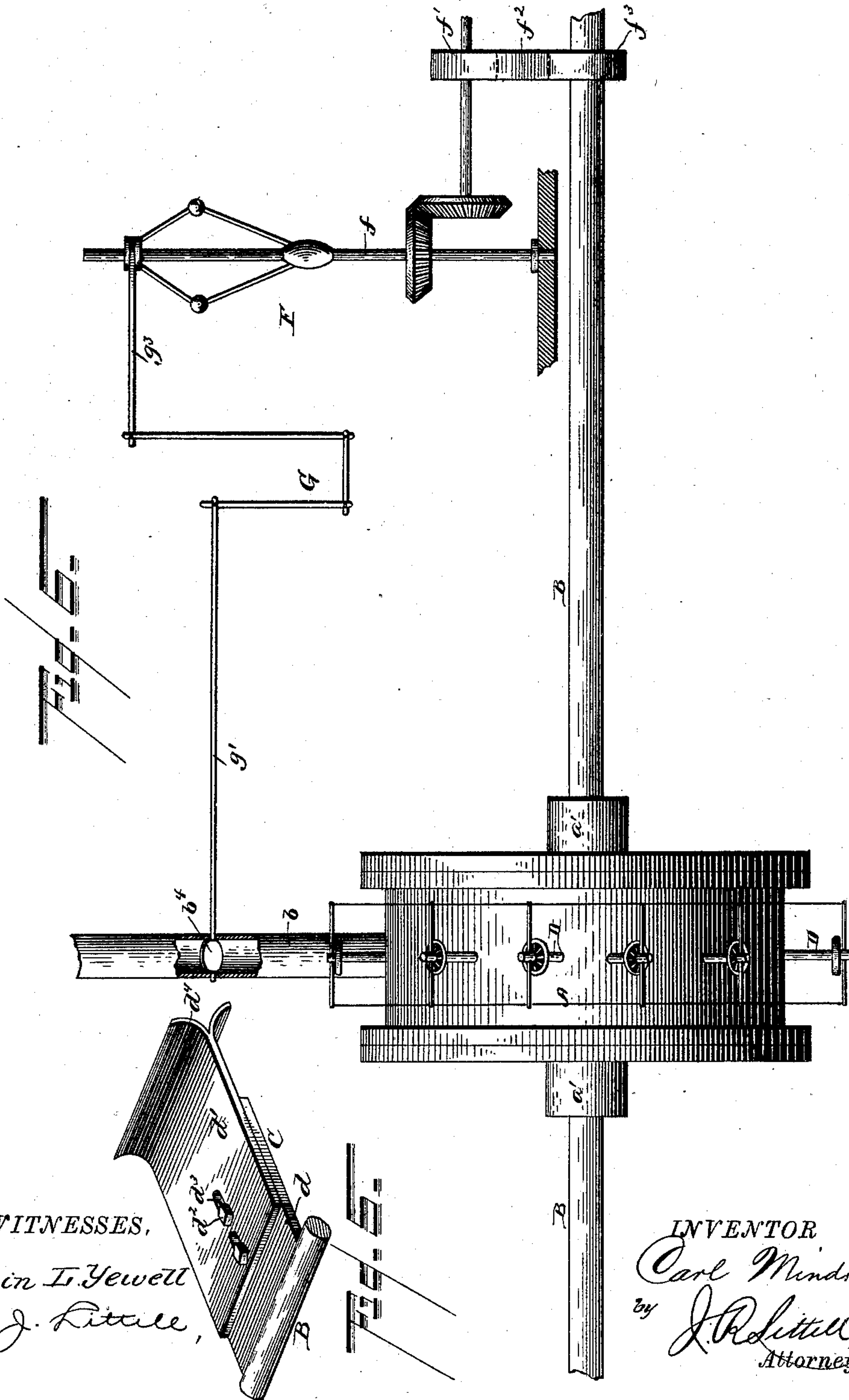
(No Model.)

3 Sheets—Sheet 3.

C. MINDT.
ROTARY ENGINE.

No. 396,759.

Patented Jan. 29, 1889.



UNITED STATES PATENT OFFICE.

CARL MINDT, OF LISBON, NEW HAMPSHIRE.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 396,759, dated January 29, 1889.

Application filed April 24, 1888. Serial No. 271,709. (No model.)

To all whom it may concern:

Be it known that I, CARL MINDT, a citizen of the United States of America, residing at Lisbon, in the county of Grafton and State of New Hampshire, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention pertains to certain new and useful improvements in rotary steam-engines, having for its object the production of a device of this class embodying advantages in points of simplicity, durability, general efficiency, and inexpensiveness.

15 The invention consists, briefly, of a series of separate steam chambers or compartments, all the partitions or wings of which are connected to the main shaft, said chambers or compartments being each supplied with steam, whereby the same are forced in their revolution, the degree of which is regulated by means of a suitable governor; and the invention, therefore, comprises the detail construction, combination, and arrangement of parts, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

20 In the accompanying drawings, Figure 1 is a view in perspective of my invention. Fig. 2 is a side elevation thereof with one side of the inclosing casing or cylinder removed. Fig. 3 is a vertical sectional view thereof. Fig. 4 is a horizontal sectional view taken on the line *xx*, Fig. 2. Fig. 5 is a detail perspective view. Fig. 6 is a view in side elevation of the governor employed in connection with my invention.

Corresponding parts in the several figures are denoted by the same letters of reference.

40 Referring to the drawings, A designates the inclosing casing or cylinder of my improved rotary engine, the sides *a a* of which are provided with central openings, wherein are secured suitable journal-boxes, *a' a'*, for retaining therein, so as to be free to revolve, the main shaft B. To this inclosing casing or cylinder are secured the ends of steam-inlet pipes *b b'*, entering said casing or cylinder in opposite directions, as shown, the object of which being to provide means for driving the engine in the desired direction. To this in-

closing casing or cylinder are also connected, at points adjacent the ends of the steam-inlet pipes *b b'*, the ends of steam-outlet pipes *b² b³*. These steam-outlet pipes are of course 55 provided with ordinary valves, *b''*, so as to open or close the respective pipes when desired. Each steam-inlet pipe is provided with a throttle-valve, *b⁴*, operated each by suitable means, hereinafter described. 60

To the main shaft B are connected the inner ends of divergent wings or plates C C, each of said wings being composed of two plates, *d d'*, the same being united or held together by means of nutted bolts *d²*, passed through 65 slots *d³* in one of said plates, whereby the joint length of said plates can be increased or diminished, as may be necessary. The upper end of each plate *d'* is curved in opposite directions, as at *d⁴*, the outer ends of said curved 70 portions being designed to bear snugly against the inner surface of the casing or cylinder A, and said ends can be always held against said casing or cylinder by reason of the means stated for securing the plates together. It 75 will be seen that each two wings or plates form a steam-tight chamber or compartment extending from the inner surface of the casing or cylinder to the center thereof.

Throughout the entire circumference of the 80 inclosing casing or cylinder are formed openings or apertures wherein are secured petcock-valves D D, the same being provided with short transverse rods D'. The bars of all the petcocks are connected at their outer ends by a 85 series of suitably-arranged chains, E E, whereby said valves will all be opened or closed simultaneously. These petcocks are designed to allow the escape of a limited amount of steam either in the starting of the engine or 90 during the operation thereof.

In practice when it is desired to effect the revolution of the engine in the direction of the arrow *w* steam is admitted through the steam-inlet pipe *b'*, which in entering that one 95 of the steam-compartments coincident therewith will force the same away from its inner end, starting the revolution of the shaft B and bringing the next one of the steam-compartments into line with said steam-inlet pipe, 100 and so on until all of said compartments are filled with steam, which will effect the rapid

revolution of the shaft B. When that steam-compartment first supplied with steam has nearly completed its revolution, its contained steam will escape therefrom through the
 5 steam-outlet pipe b^2 , the valve of which has been opened for the purpose. By this means a rapid and continuous revolution of the engine is obtained.

When it is desired to revolve the engine in
 10 the direction opposite to that above detailed, the same is accomplished by admitting the steam through the steam-inlet pipe b , permitting the same to escape through the steam-outlet pipe b^3 , the throttle and valve of the
 15 pipes b b^2 being closed for the purpose.

In connection with my invention a governor, F, is employed for regulating the revolution of the engine. Said governor is of ordinary construction and is supported in position by suitable means. Upon a shaft, f ,
 20 carrying a pinion gearing with a pinion of the governor, is secured a band-wheel, f' , around which is passed a band or belt, f^2 , also passed around a second band-wheel, f^3 ,
 25 fast upon the main shaft B. By this means motion is transmitted to the governor.

To each throttle b^4 in each steam-inlet pipe is connected one end of a rod, g' , the outer end of which is connected to one rod of a series
 30 of rods, G, and to these rods is connected one end of a rod, g^3 , secured at its other end to the governor-shaft. By this arrangement the operator can regulate the supply of steam to the engine by simply grasping one rod of the
 35 series of rods G.

From the foregoing description it will be seen that the movement of my improved rotary engine can be regulated as desired, and that by reason of the described formation of

the wings or plates each two of said wings or
 40 plates constitute a separate steam chamber or compartment, whereby the driving of the engine is greatly augmented.

I claim as my invention—

1. As an improvement in rotary engines of
 45 the class herein described, the wings or plates composed each of two plates, one of which is slotted, and connected together by nutted bolts, substantially as shown and described.

2. The herein-described wings or plates
 50 composed each of two plates, one of which is slotted and the other is curved in opposite directions at its outer end, substantially as shown and described, said plates being held together by means of nutted bolts. 55

3. The herein-described rotary engine having the series of separate steam-compartments composed each of plates having oppositely-curved outer ends, and the steam inlet and outlet pipes, substantially as shown and de- 60 scribed.

4. The herein-described improved rotary engine comprising the inclosing casing or cylinder having apertured sides, the main shaft, the series of separate steam-compart- 65 ments composed of adjustable plates having oppositely-curved outer ends, the steam inlet and outlet pipes, the petcock-valves and their chain-connections, the governor, and the steam-supply-regulating throttle, substan- 70 tially as shown and described.

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

CARL MINDT.

Witnesses:

A. A. WOOLSON,
 JOHN L. FOSTER.