

(No Model.)

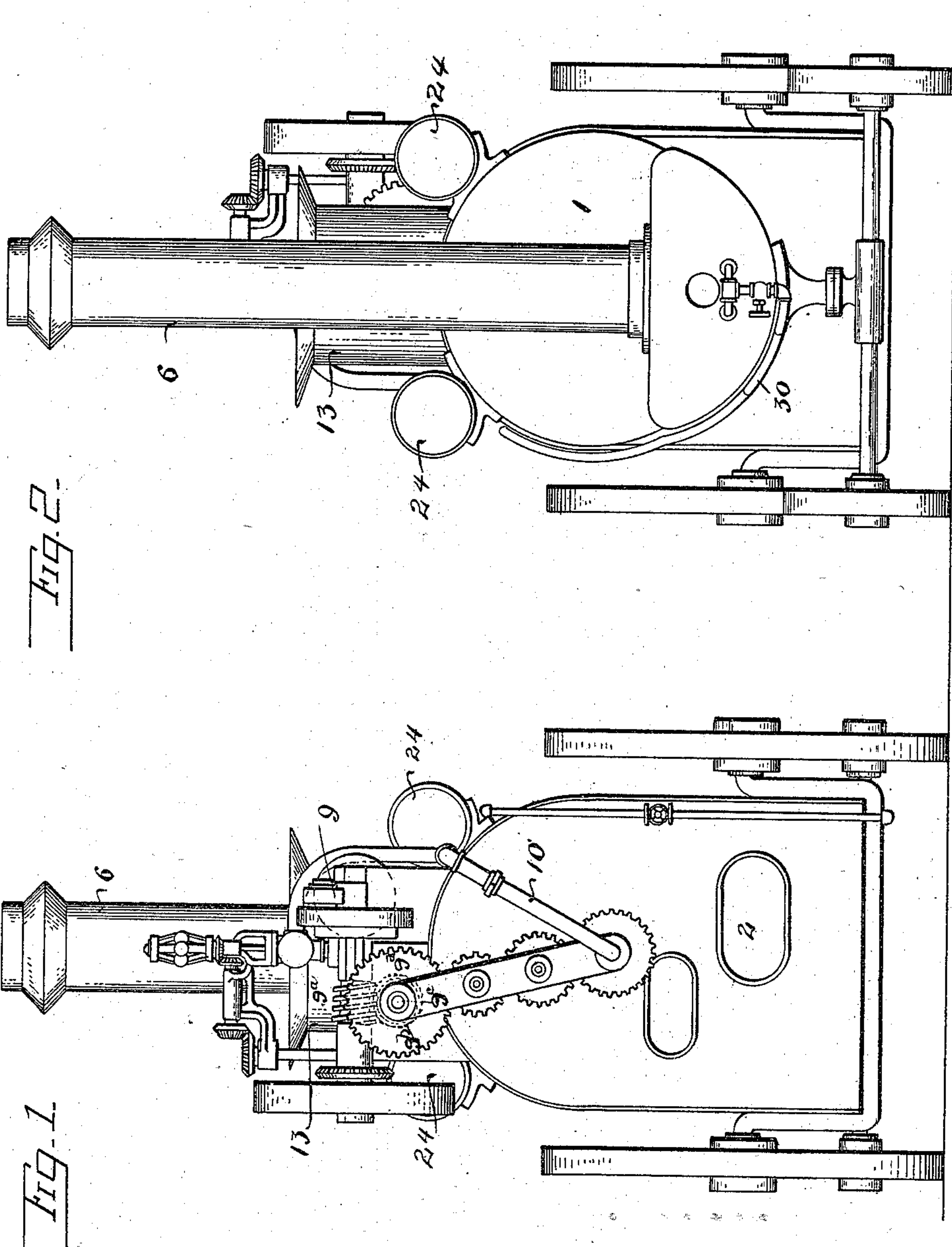
3 Sheets—Sheet 1.

O. D. McCLELLAN.

APPARATUS FOR CREMATING GARBAGE, &c.

No. 558,975.

Patented Apr. 28, 1896.



Witnesses:

Jesse B. Keller.
Jas S Keller

Inventor.

Oscar D. McClellan,
per John B. Nolan

Attorney.

(No Model.)

3 Sheets—Sheet 2.

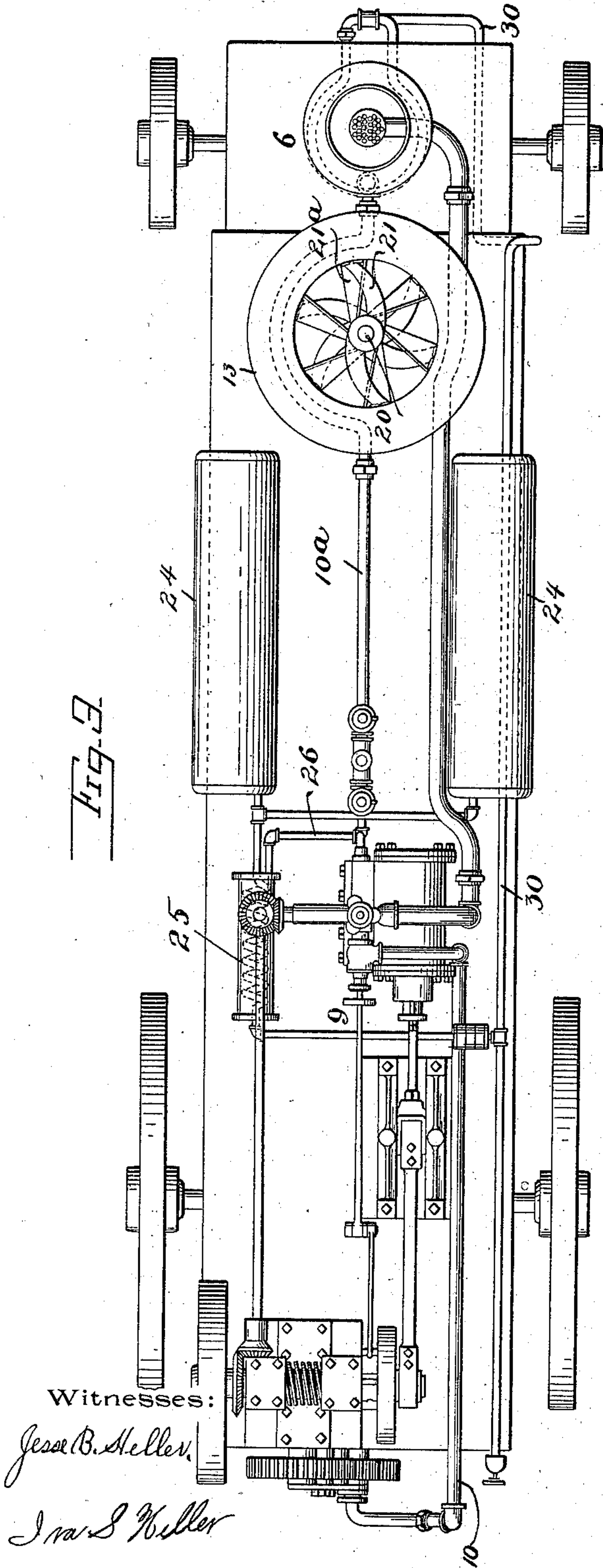
O. D. McCLELLAN.

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Fig. 3.



Witnesses:

Jesse B. Heller,

Irwin S. Heller

Fig. 5.

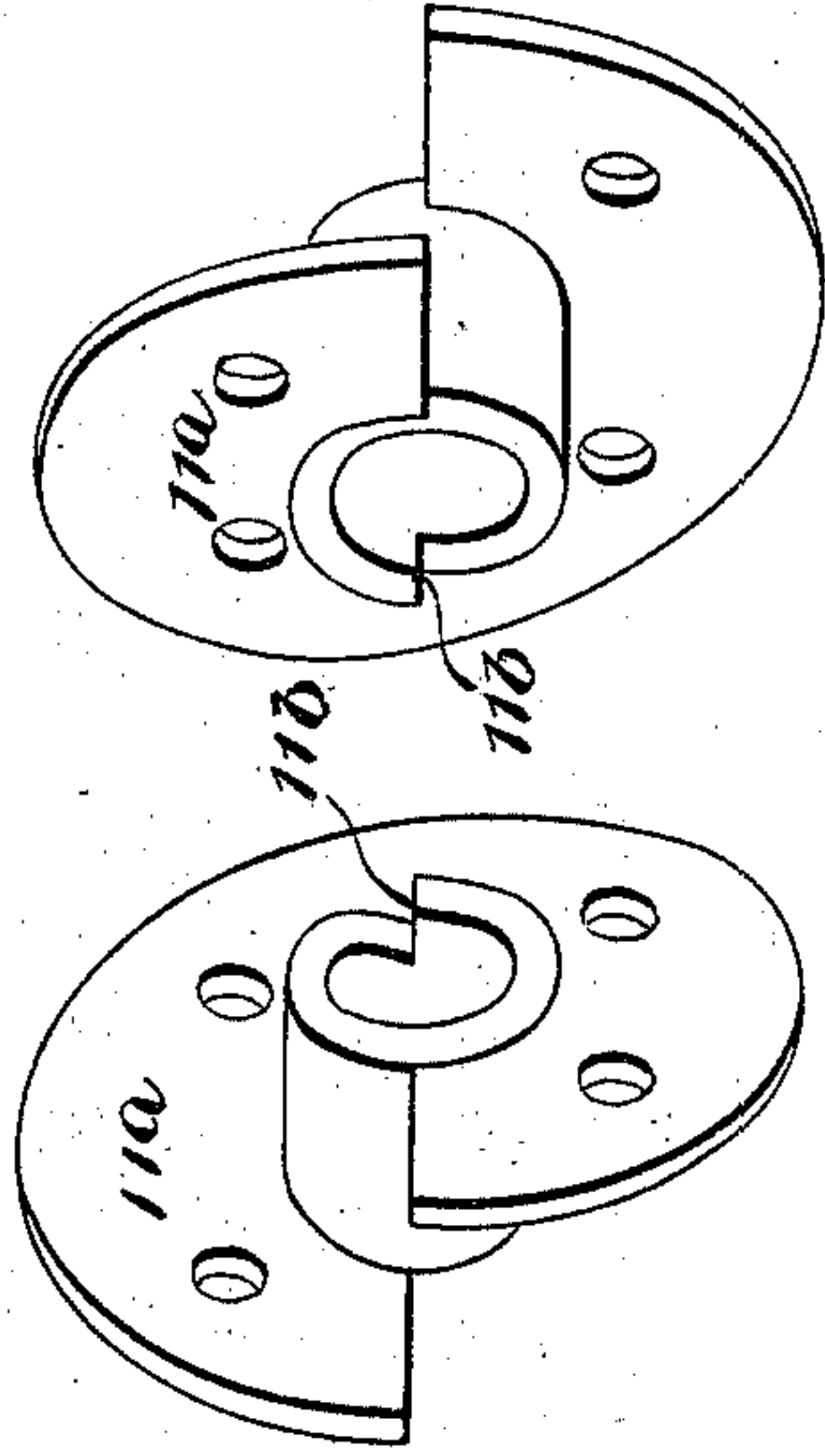
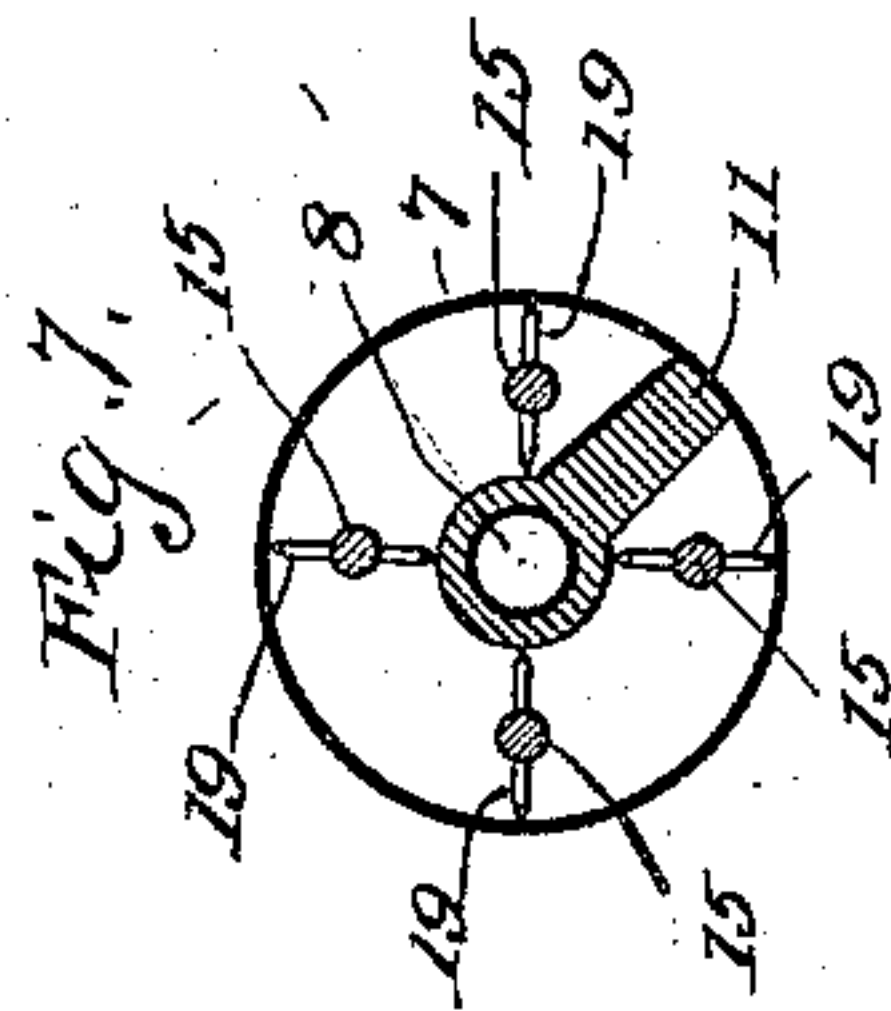
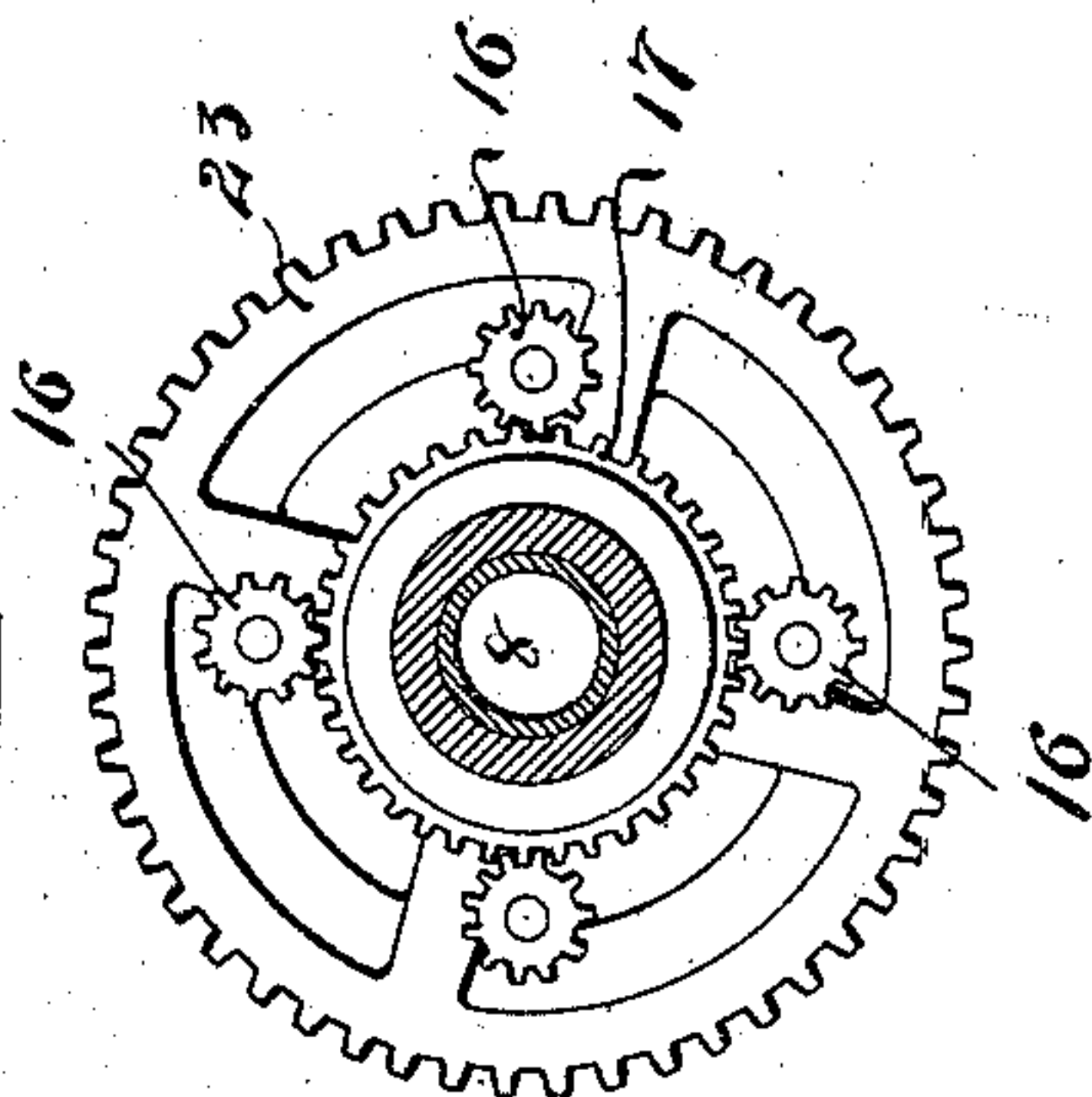


Fig. 5.



Inventor.

Oscar D. McClellan,

per John T. Nolan

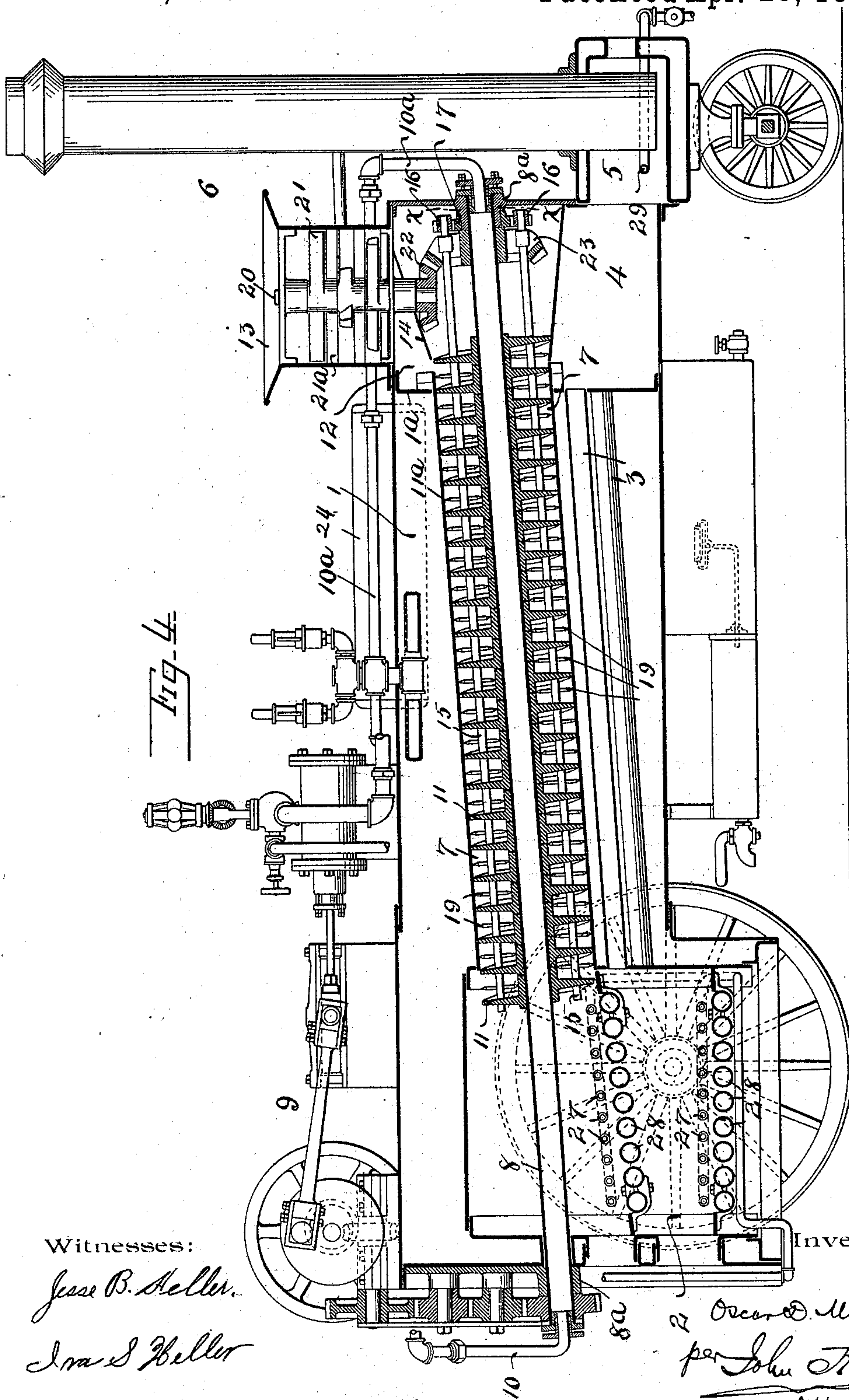
Attorney.

(No Model.)

3 Sheets—Sheet 3.

O. D. McCLELLAN.

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No. 558,975. Patented Apr. 28, 1896.



Witnesses:

Jesse B. Heller.

Ira S. Heller

Inventor.

Oscar D. McClellan
per John T. Nolan
Attorney.

UNITED STATES PATENT OFFICE.

OSCAR D. McCLELLAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, FRANCIS DOUGHERTY, AND JOHN HAND PARKE, OF SAME PLACE.

APPARATUS FOR CREMATING GARBAGE, &c.

SPECIFICATION forming part of Letters Patent No. 558,975, dated April 28, 1896.

Application filed June 21, 1894. Serial No. 515,240. (No model.)

To all whom it may concern:

Be it known that I, OSCAR D. McCLELLAN, a citizen of the United States, residing at the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Cremating Garbage, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in apparatus for cremating garbage, and more particularly in the construction of the machine forming the subject of an application for Letters Patent filed by me August 3, 1893, Serial No. 482,264. These improvements, which are designed to increase the capacity and efficiency of the previous apparatus, comprehend various features of construction and organization of parts, that will be hereinafter fully described, and be defined in the claims.

In the annexed drawings, Figures 1 and 2 are front end and rear end views, respectively, of the improved apparatus. Fig. 3 is a plan. Fig. 4 is a longitudinal sectional elevation. Fig. 5 is a detail section of the gearing for actuating the comminuting devices, as on the line *xx* of Fig. 4. Fig. 6 represents perspective views of two adjoining sections of the screw conveyer. Fig. 7 is a transverse section through the receiver and the conveyer.

The numeral 1 indicates a horizontal boiler; 2, a furnace or combustion-chamber at the rear end thereof; 3, fire-tubes extending from said furnace or chamber to the smoke-box 4; 5, a forward extension of said smoke-box, and 6 a stack extending into said extension.

The structure is mounted upon suitable carrying-wheels, whereby it may be drawn from place to place.

Extending longitudinally through the boiler, preferably, though not essentially, inclined downward from front to rear, is a cylindrical receiver or desiccating-chamber 7, the lower end of which communicates with the furnace, while the upper end extends through the head 1^a of the boiler. Thus the said receiver is surrounded and its contents heated by the water and steam in the boiler. Running centrally

through this receiver, and also through the furnace-chamber, is a hollow shaft 8, the ends of which are journaled in suitable boxes 8^a in the respective ends of the structure, one end of the shaft being geared with and driven from an engine 9 supported on the boiler. The particular construction of gearing herein shown comprises a worm 9^a on the shaft of the engine meshing with a worm-wheel 9^b on an underlying counter-shaft 9^c, which latter shaft is equipped with a wheel 9^d of a gear-train mounted on the rear end of the structure and connected with the end of the shaft 8. This end of the shaft is connected with a steam-pipe 10, that communicates with the boiler, while the opposite end is connected with a pipe 10^a, that communicates with the steam-chest of the engine, whereby the steam on its passage from the boiler to the engine passes through said central shaft, being therein superheated, and at the same time utilized to heat the contents of the receiver. By this construction the temperature of the desiccating-chamber is maintained at from 350° to 400° Fahrenheit.

Upon that portion of the shaft within the receiver is a screw conveyer 11, which is adapted during its rotation to convey through the receiver to the furnace in a thin layer any matter that may be fed to the upper or forward end of the receiver. This conveyer is preferably made in sections 11^a, that are fitted side by side to the shaft in a manner to preserve the continuity of the spiral blade. The sections are provided with interlocking shoulders 11^b, so disposed that when the sections are mounted on the shaft it is merely requisite to key or otherwise securely fasten the extreme end sections to the shaft. By this construction should the blade of the conveyer be broken or otherwise injured at any point throughout its length, the defective section may be readily removed and a perfect section be as readily substituted therefor. The upper end of the receiver extends into a chamber 12, located immediately above the smoke-box at the forward end of the machine, with which chamber communicates a hopper 13, bolted to the top of the external casing. Immediately below the hopper is an inclined

plate or chute 14, that is directed toward the mouth of the receiver in a manner to deliver the descending contents of the hopper to the screw conveyer. Extending through the blades of the conveyer at suitable intervals apart are longitudinal shafts 15, the upper ends of which extend into the chamber 12 beneath the chute 14. On these ends are pinions 16, that gear with a spur-wheel 17, which is fixed to a boss on the adjacent bearing of the central shaft, whereby during the rotation of the conveyer the shafts 15 will be positively rotated. On each of the shafts in the respective spaces between the conveyer-blades are arranged arms or cutters 19, which are adapted during their rotation to comminute and disintegrate the contents of the receiver. In the present instance I have illustrated the machine as equipped with four shafts 15, each provided with two disintegrating members in each space or chamber of the conveyer, although, of course, the number of shafts or the number of arms thereon may be reduced or multiplied, as occasion may require, without affecting the scope of my invention.

Mounted centrally within the hopper is a vertical shaft 20, to which are secured at intervals apart radial knives or choppers 21, which alternate with radially-disposed plates 21^a, bolted to the inner sides of the hopper, whereby during the rotation of said shaft the knives and plates will coact to disintegrate and reduce the matter fed to the hopper, such matter, thus treated, being delivered to the receiver as above described. Shaft 20 is driven from the central shaft by means of a pair of bevel-gears 22 23 on the shafts, respectively, although, if desired, the shaft 20 may be actuated through the medium of other connections from the engine.

I prefer to use for the purpose of incinerating the matter discharged into the furnace a suitable hydrocarbon gas that is generated upon the machine, the oil-reservoirs 24 and carbureting-chamber 25 being located upon the body of the apparatus and the steam being conducted to said chamber by means of a branch pipe 26, connected with the steam-pipe 10^a. Suitably arranged in the furnace-chambers are burners 27, which are connected with the carbureting-chamber, suitable cocks being provided to regulate the gas supply.

There are preferably arranged in the furnace two sets of grate-bars 28, one above the other, thus constituting two combustion-chambers. The dried and comminuted substance is discharged from the receiver or desiccating-chamber over and upon the upper set of grate-bars, whence the unconsumed residue drops into the chamber below, wherein the temperature is maintained at an extremely high degree.

It will be observed that the smoke-stack ex-

tends down near the bottom of the chamber 5, so that the products of combustion on their passage to the stack are drawn downward. Around this portion of the stack is a perforated gas-burner 29, that is connected with the gas-supply pipe 30, whereby the smoke and odor, as they seek the stack, are effectually consumed, thus precluding their escape to the atmosphere.

I claim—

1. The combination of a combustion-chamber, horizontally-arranged exit-flues leading therefrom, a receiver located above the said flues and leading to the said chamber, a hollow rotatory shaft carrying a suitable conveyer and passing through the said chamber and receiver, means for rotating said shaft, and a pipe providing communication between the boiler and that end of the hollow shaft nearest to the said chamber, whereby the steam is superheated before passing through the receiver and whereby the receiver is subjected to the action of the products of combustion, substantially as described.

2. An apparatus for cremating garbage, &c., the same comprising a horizontal boiler, a combustion-chamber at the rear end thereof, horizontally-arranged exit-flues leading from said chamber to a smoke-stack at the forward end of the boiler, a receiver extending through the interior of the boiler above said flues, a hollow rotatory shaft carrying a suitable conveyer and passing through the said chamber and receiver, means for rotating said shaft, and a pipe providing communication between the boiler and that end of the hollow shaft nearest to the said chamber, whereby the steam is superheated before passing through the receiver and whereby the receiver is subjected to the action of the water in the boiler, substantially as described.

3. The combination with a receiver, of a screw conveyer extending through the same, a shaft extending through the blades of the conveyer, arms or cutters on said shaft, and means for actuating the latter, substantially as described.

4. The combination with a receiver, of a screw conveyer extending through the same, a shaft extending through the blades of said conveyer, arms or cutters on said shaft, means for rotating said conveyer, a fixed gear concentric with said conveyer, and a pinion on said shaft coacting with said fixed gear, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

OSCAR D. McCLELLAN.

Witnesses:

JOHN R. NOLAN,
IRA S. HELLER.