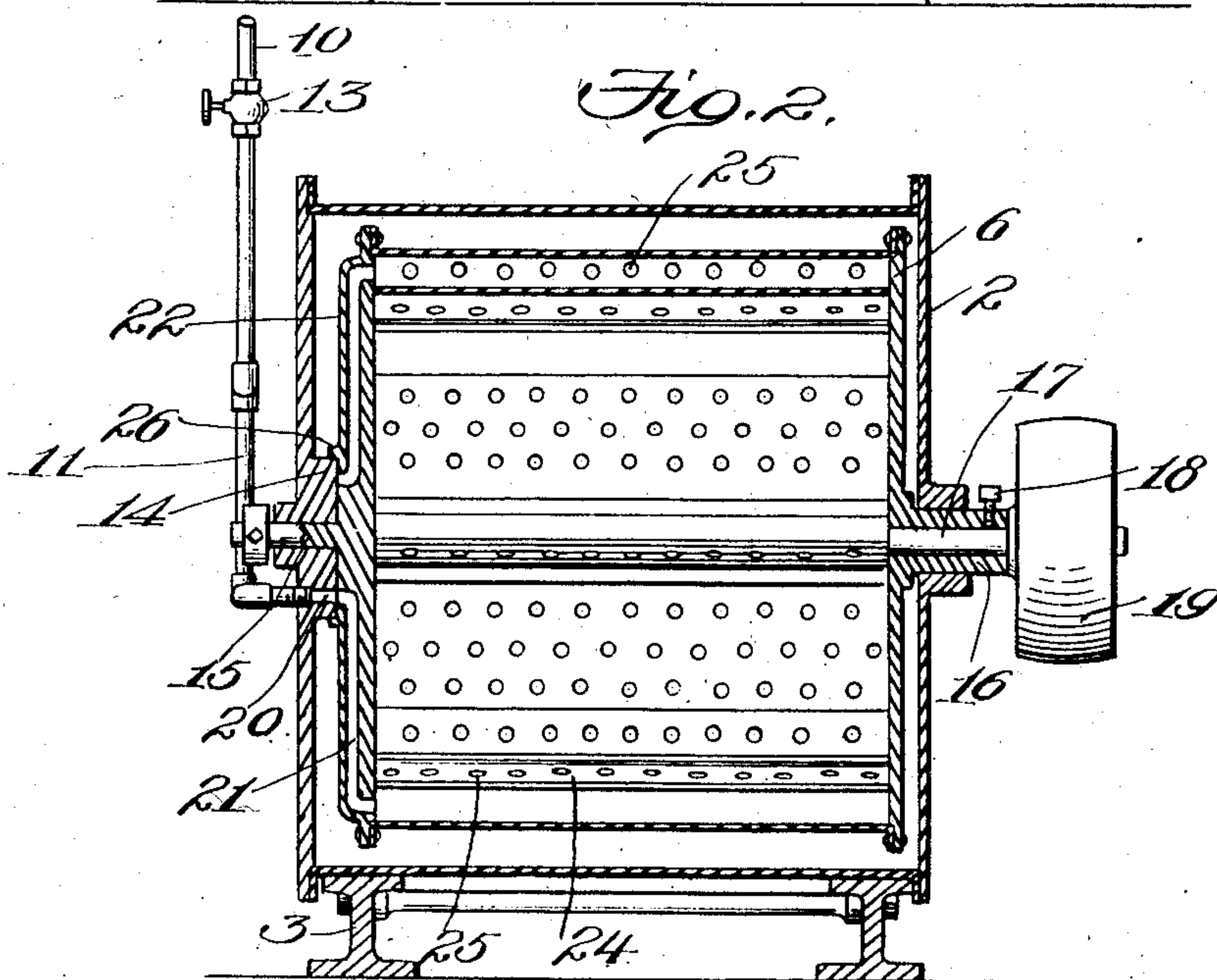
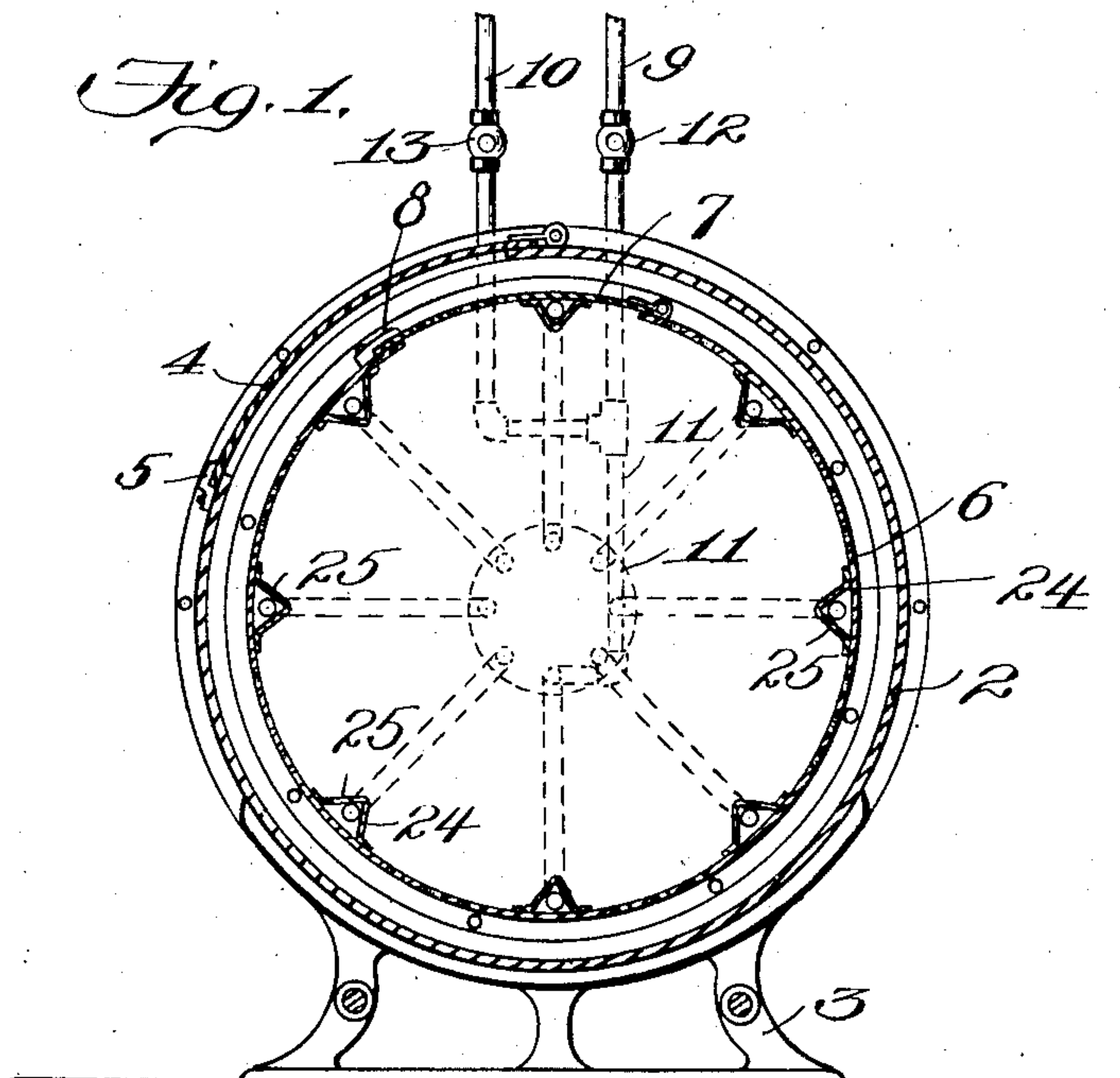


W. S. NICOLSON.
 WASHING MACHINE.
 APPLICATION FILED FEB. 4, 1908.

906,816.

Patented Dec. 15, 1908.

2 SHEETS—SHEET 1.



Witnesses
W. S. Hester
J. B. Keeler

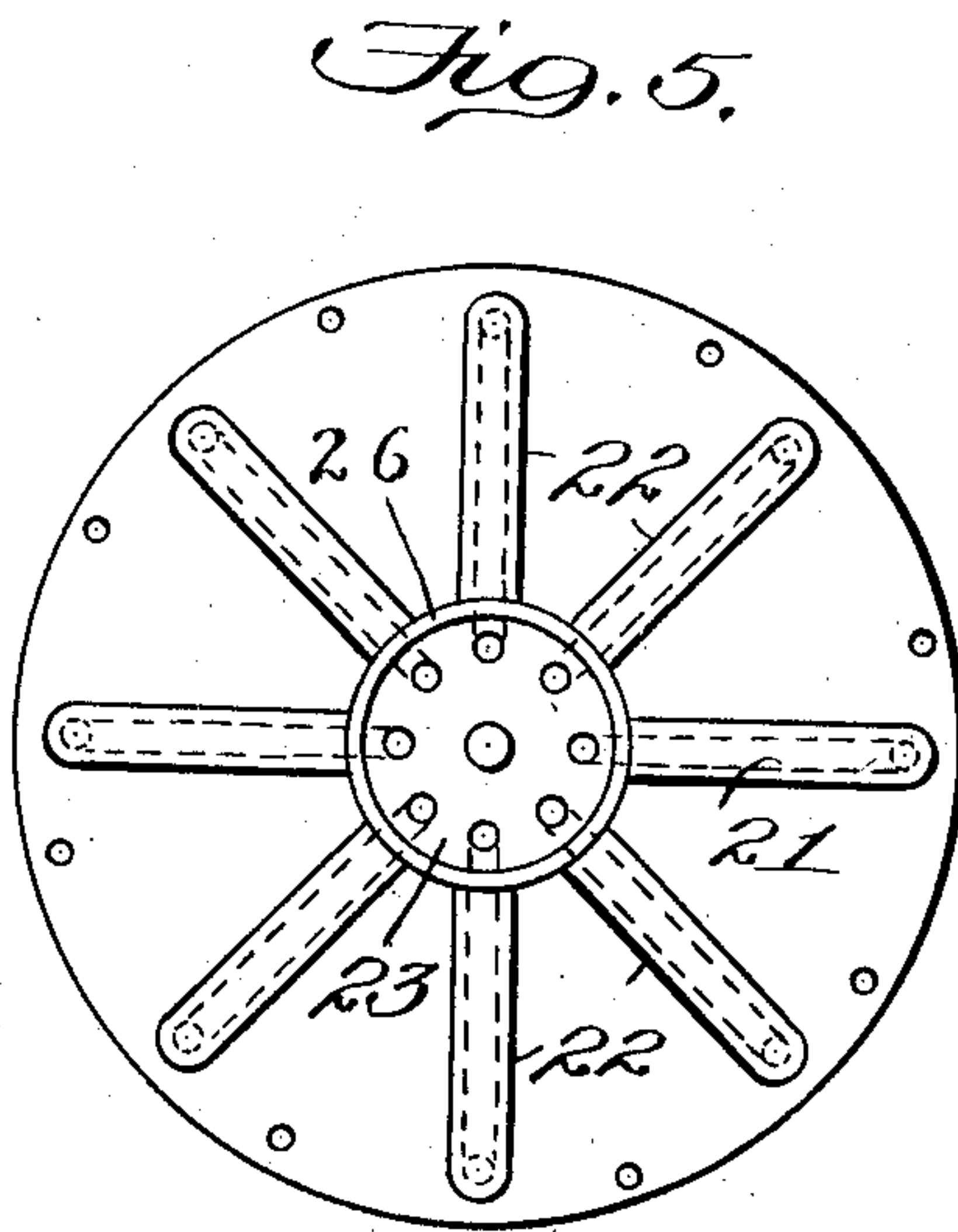
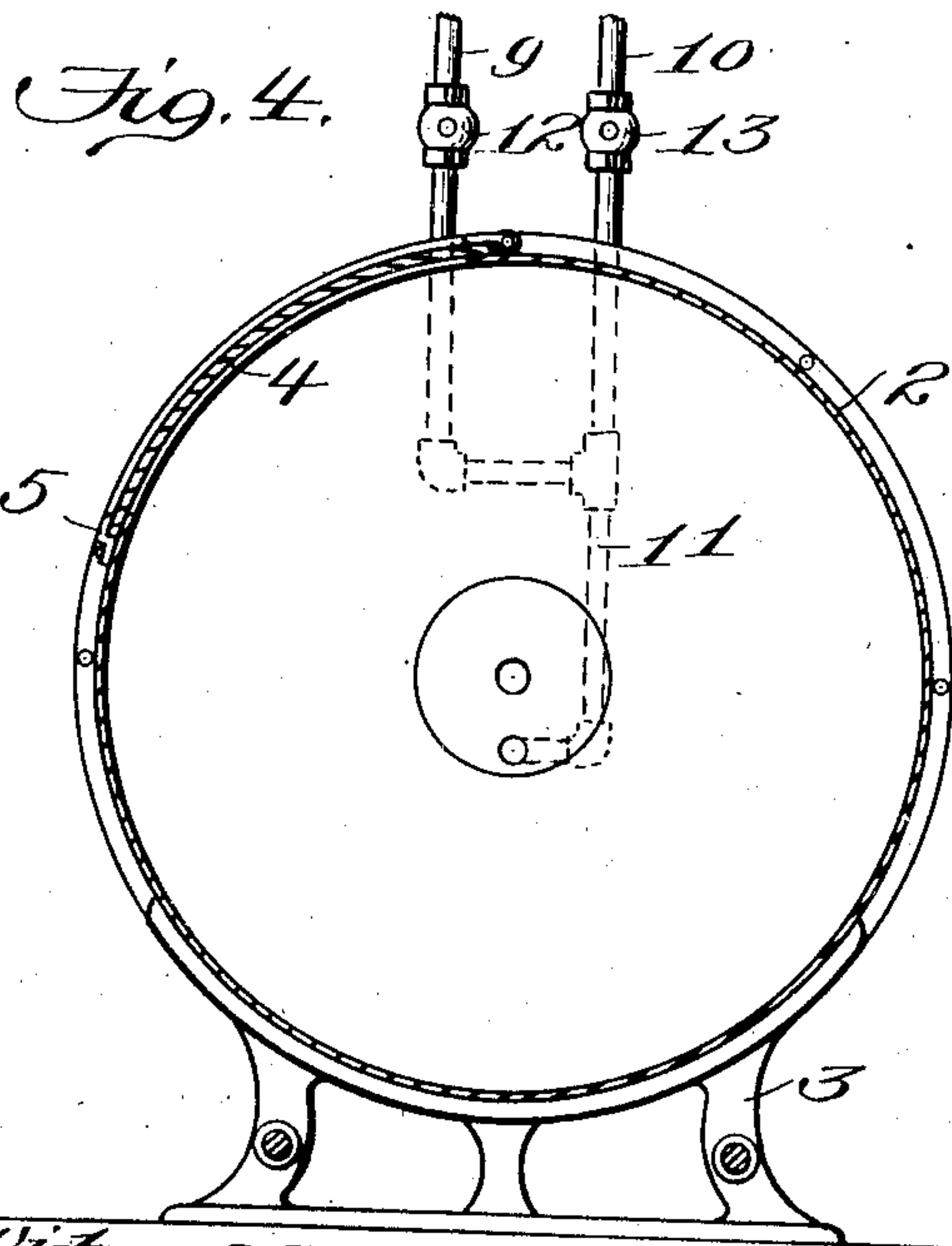
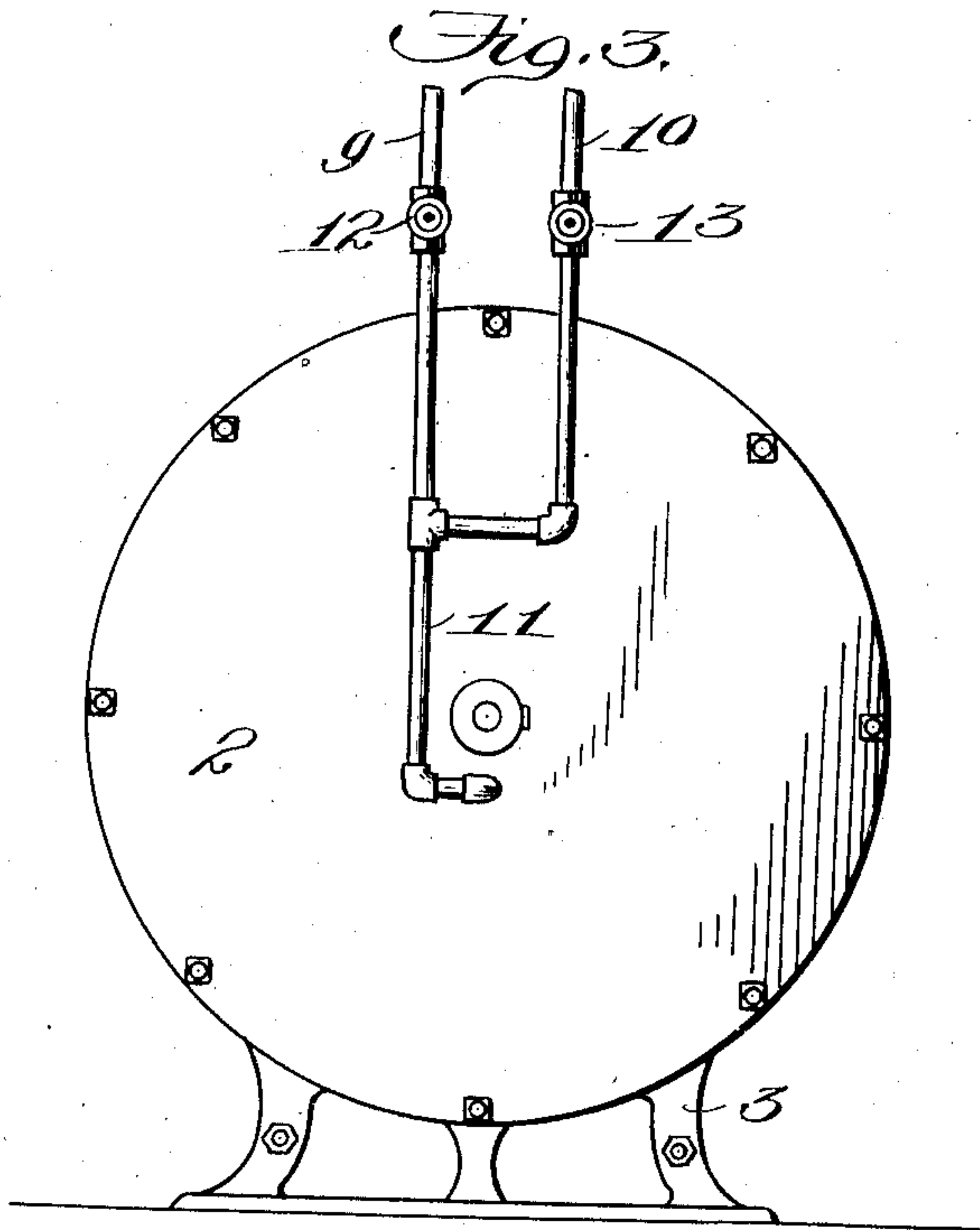
Inventor
William S. Nicolson
James L. Norris
att'y

W. S. NICOLSON.
WASHING MACHINE.
APPLICATION FILED FEB. 4, 1908.

906,816.

Patented Dec. 15, 1908.

2 SHEETS—SHEET 2.



Witnesses:
Ed. Hesler
J. B. Keeler

Inventor
William S. Nicolson
By *James L. Norris*
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM S. NICOLSON, OF SALISBURY, NORTH CAROLINA.

WASHING-MACHINE.

No. 906,816.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed February 4, 1908. Serial No. 414,208.

To all whom it may concern:

Be it known that I, WILLIAM S. NICOLSON, a citizen of the United States, residing at Salisbury, in the county of Rowan and State of North Carolina, have invented new and useful Improvements in Washing-Machines, of which the following is a specification.

This invention relates to washing machines, the object of the invention being to provide an effective apparatus of this character for thoroughly and rapidly cleaning goods without possibility of injury thereto.

In the drawings accompanying and forming part of this specification I show in detail one simple form of embodiment of the invention which, to enable those skilled in the art to practice the same, will be set forth in detail in the following description, while the novelty of the invention will be included in the claims succeeding said description.

Referring to the drawings: Figure 1 is a transverse sectional view of a washing machine involving my invention. Fig. 2 is a longitudinal sectional view of said machine. Fig. 3 is an end elevation of the same. Fig. 4 is a cross sectional view of the outer casing looking toward the end thereof appearing in Fig. 3. Fig. 5 is an end elevation of the inner drum.

Like characters refer to like parts throughout the several figures of the drawings.

The machine includes in its make-up an outer or stationary casing 2 which may be of any desirable material or form. The said casing may be of cylindrical shape and it may be made of metal or wood or a combination of these materials, as desired. Said casing or cylinder 2 rests upon a framing or bed such as that denoted in a general way by 3, the two parts being united in any desirable manner. The casing 2 is provided with a hinged door or flap 4 by which access may be had to the interior thereof and which, during the washing operation, is held closed by a latch 5.

Within the casing 2 is mounted an inner cylinder or drum 6 which, in the present case, is rotary, the periphery of the drum or cylinder 6 being separated from the inner surface of the outer casing or cylinder 2 to provide for the thorough circulation of water or other fluid therebetween. The peripheral portion of the rotary drum has a multiplicity of perforations for the passage of the water or other fluid that may be introduced

into the apparatus. The inner drum or rotary cylinder 6 is equipped with a hinged door 7 by opening which apparel, clothing, or other goods can be introduced into or removed from said inner drum, the door being held closed by a catch 8.

To aid in the thorough cleansing of the material in the drum 6 I introduce thereinto a fluid preferably under pressure, and this fluid may be of any desirable kind, for example, it may be steam or compressed air, separate pipes being provided to lead either of these substances into said drum 6, or one of these pipes can be utilized for conducting a bleaching gas into the said drum 6. Two of such pipes are shown, one being denoted by 9 and the other by 10. The pipe 9, for example, may be used for conveying steam, while the pipe 10 can carry compressed air, each of these agents being received from a suitable source of supply not illustrated. The delivery ends of these pipes 9 and 10 join and from their point of junction the pipe 11 extends, the latter constituting what might be considered the main supply pipe or duct, while the pipes 9 and 10 constitute auxiliary supply pipes or ducts. In the pipe 9 is a valve 12, while the pipe 10 may be furnished with a similar valve 13. By closing the valve 13 and opening the valve 12 steam can be supplied to the apparatus and, by reversing this operation, compressed air can be delivered into said apparatus.

Within the outer casing or cylinder 2 and on one end thereof is a boss 14, and through said boss and end a spindle 15 projecting from one end of the drum 6 extends, the opposite end of the drum being provided with a tubular spindle or sleeve 16 extending through the opposite end of the outer casing or cylinder 2. Into the tubular spindle or sleeve 16 is fitted a stub shaft 17, the two parts being connected together in some suitable manner by a set-screw 18. The stub shaft 17 is represented as carrying a pulley 19 adapted to be operated by a belt not shown. When the belt is in motion it will be clear that the drum 6 will be turned. I tending through the boss 14 is a port or passage 20, and the pipe 11 is inwardly bent at its lower end, the inwardly bent portion being tapped into the adjacent end of the cylinder 2 to put said pipe 11 into communication with said port or passage 20. The port

or passage 20 is located in the lower part of the boss 14, and the purpose of this will hereinafter appear.

That end of the drum 6 which is adjacent to the boss 14 is provided with several radial passages 21 which extend longitudinally of ribs 22 and the hub portion 23 of the drum 6, said ribs 22, as shown in Fig. 5, being formed on the exterior of the drum 6. The receiving ends of these passages or channels 21 are bent outward, while the delivery ends thereof are bent inward, to deliver fluid, whether it be steam, compressed air, or some other agent, into the ducts 24 within the drum 6. Said ducts 24 can be formed by longitudinal hollow ribs or semi-tubes fastened to the inner surface of the drum 6, and there may be any desirable number of these semi-tubes or hollow ribs 24. The semi-tubes or hollow ribs 24 extend from one end of the drum 6 to the other and, in the present case, they are of approximately V-shape in cross section and have in one of their sides perforations 25 arranged in rows, through which perforations the steam, compressed air, or other agitating fluid is jetted against the articles in said drum during the rotation of the latter. There may be any desirable number of these hollow ribs or semi-tubes 24.

The hub portion 23 of the drum 6 is provided with an annular flange 26, as shown in Fig. 2, surrounding the circumference of the boss 14 with substantially a fluid-tight fit. While I have a plurality of ducts or passages 21, there is in the present case only one supply port 20 therefor, and by virtue of this I am enabled to supply only one of the ducts 21 at a time, the parts being so arranged that preferably I supply through one of said ducts 21 what is for the time being the lowermost duct 24. It will be assumed that a fluid is being supplied to the pipe 11 and naturally such fluid fills the passage or port 20. The entering end of one of the passages or ducts 21 is shown in register with the port or passage 20, the entering ends of the remaining passages or ducts 21 being covered by the solid or imperforate inner face portion of the boss 14, whereby the fluid from the pipe 11 will pass into only one of the passages or ducts 21 which in the present case would be that passage or duct 21 which stands vertically below the center of motion of the drum in Fig. 1. The consequence of this is that the fluid from the pipe 11 passes only into the lowermost duct or longitudinal passage 24 and, emerging from the latter, passes into the interior of the drum 6.

By virtue of the construction hereinbefore described I can thoroughly and quickly remove dirt from clothing. When the inner drum is rotating I force, during such operation, compressed air, steam, or other fluid

directly against and through the goods and therefore save time in washing, improve the quality of work, and lessen possibility of injury to the goods. By means of the apparatus I am enabled to pass air or other suitable fluid through the goods below the surface of the water in the machine.

It will be clear from what has been hereinbefore stated that each duct or passage 21 and a cooperating duct or passage 24 present collectively a conduit for conveying an agitating fluid into the interior of the drum 6, and these conduits have a portion movable below the surface of the water in the drum and outer casing 2.

I wish to make it clear that I provide means whereby I am enabled to direct an agitating fluid, such as steam, air or gas, against and if necessary through the clothing in the under portion of a movably mounted drum or clothes-container. In the present case this result I accomplish by passing a pressure fluid, such as air, through the lowermost one of a series of ducts on a rotary drum. This particular relation, however, is not essential, for the primary object is passing an agent, such as that indicated, upwardly through a mass of clothing and not from the sides thereof, whereby effectual cleansing of said clothing can be obtained.

What I claim is:

1. In a washing machine, an outer casing, a drum having conduits, each conduit being movable to the lower portion of the casing, and means for supplying a fluid to the conduits, the machine having means to prevent the flow of the fluid into certain of the conduits while such fluid is being supplied to one of said outlets.

2. In a washing machine, a casing and a movable drum in the casing, the drum having conduits extending fully from end to end of the interior thereof and provided with perforations opening into the interior of said drum and also having entering ends exterior of the ends of said drum, the casing having a member provided with a port, and the drum, on its movement, being adapted to bring the entering ends of said conduits into register with said port.

3. In a washing machine, a casing and a rotary drum in said casing, the drum having conduits extending transversely and longitudinally thereof, the conduits having perforations opening into the interior of the drum, and the casing having a boss provided with a port through the same, the entering ends of said conduits being adapted to successively register with said port on the rotation of the drum.

4. In a washing machine, an outer casing provided with an interior boss on one end thereof, said boss having a port through the same, and a rotary perforated drum in the casing, the drum having conduits extending

transversely and longitudinally of the same, the entering ends of said conduits being adapted to successively register with said port and said conduits having perforations 5 in the drum, and the drum having an annular flange overlying and turning upon said boss.

10 5. In a washing machine, a casing and a rotary drum in said casing, the drum having at one end thereof a series of radial passages and also having interiorly thereof a series of hollow ribs of substantially V-form in cross section, one side of each rib being perforated and the interiors of the ribs being in communication with the respective passages, the 15 casing having an interior boss provided with a port, and said passages being adapted to successively register with said port on the rotation of the drum.

20 6. In a washing machine, a casing, a rotary drum in said casing, the drum having

at one end thereof a series of radial passages and also having interiorly thereof a series of hollow ribs of substantially V-form in cross section, one side of each rib being perforated 25 and the interiors of the ribs being in communication with the respective passages, the casing having an interior boss provided with a port, and said passages being adapted to successively register with said port on the 30 rotation of the drum, a pipe in communication with said port, and other pipes provided with valves, in communication with said first-mentioned pipe.

In testimony whereof I have hereunto set 35 my hand in presence of two subscribing witnesses.

WILLIAM S. NICOLSON.

Witnesses:

J. M. McCORKLE,
HENRY W. DAVIS.