

No. 771,570.

PATENTED OCT. 4, 1904.

J. M. PEARSON.

BOILER.

APPLICATION FILED JAN. 18, 1904.

NO MODEL.

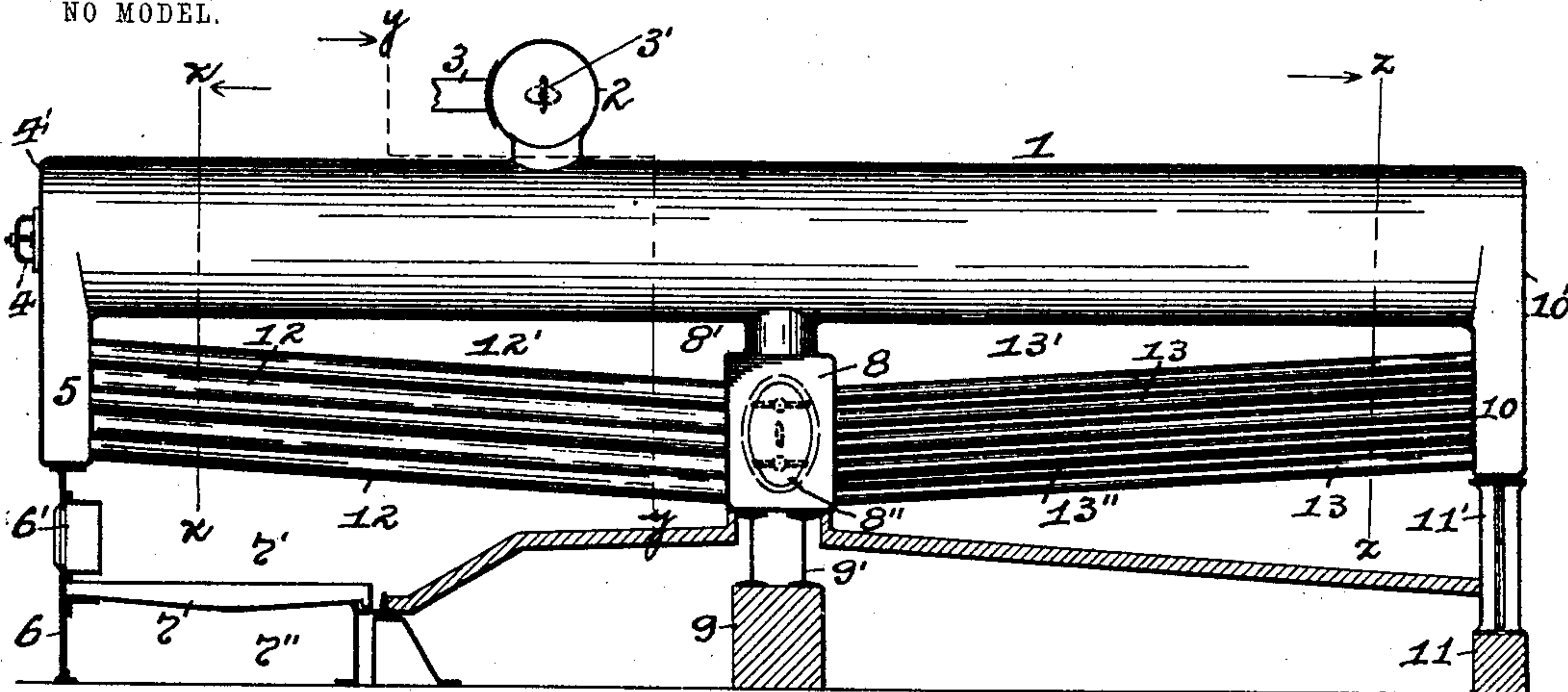


Fig. 1

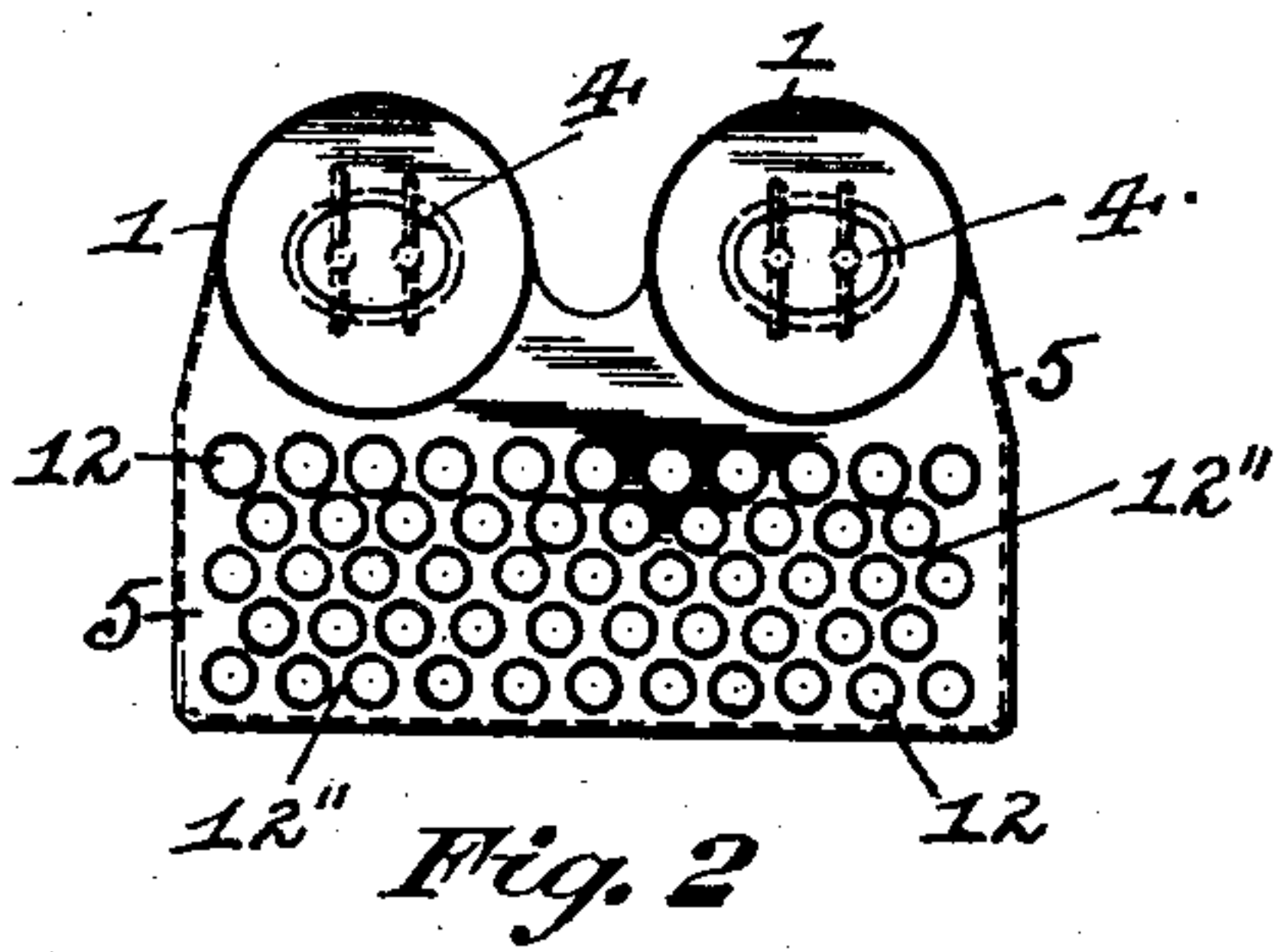


Fig. 2

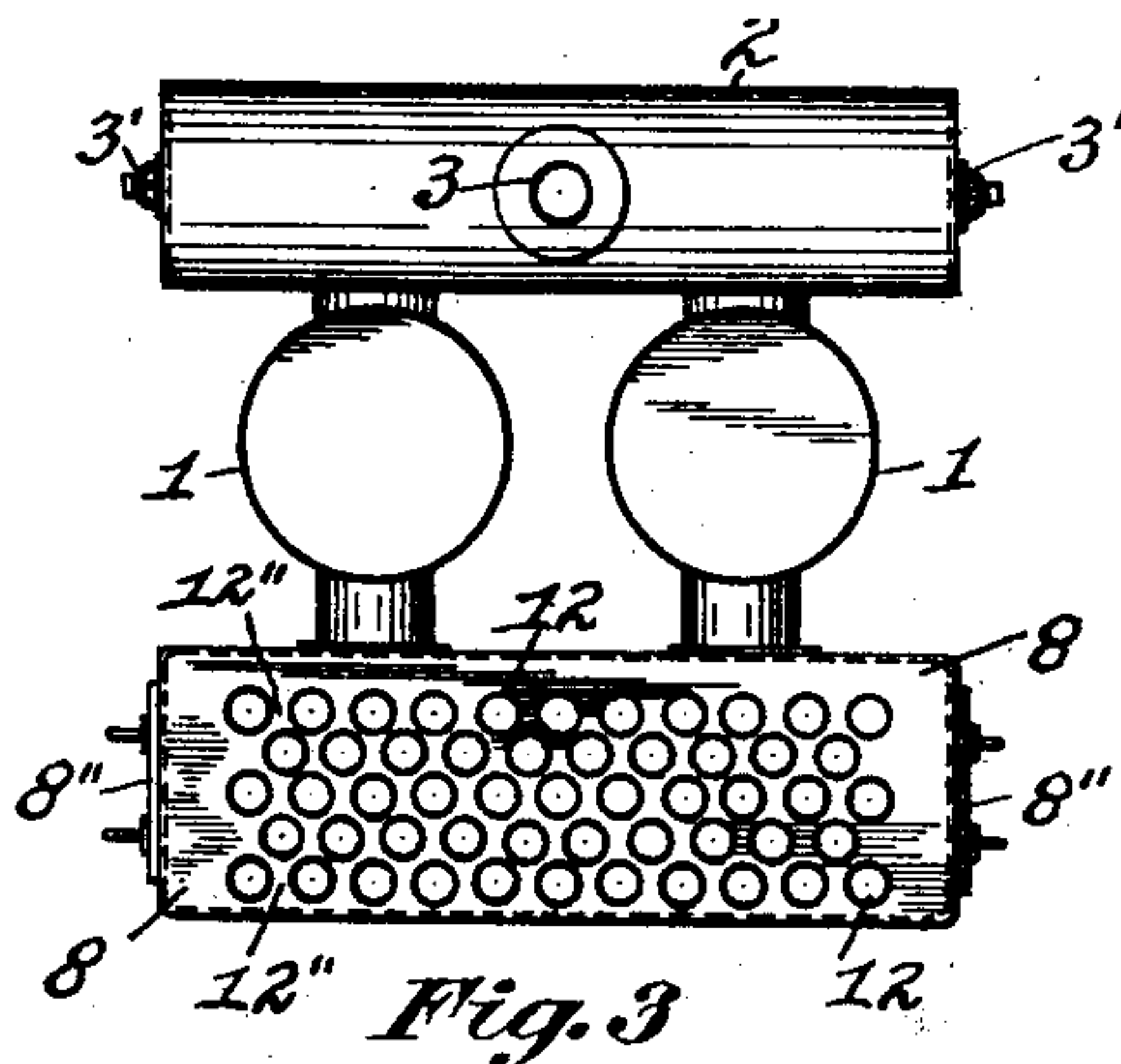


Fig. 3

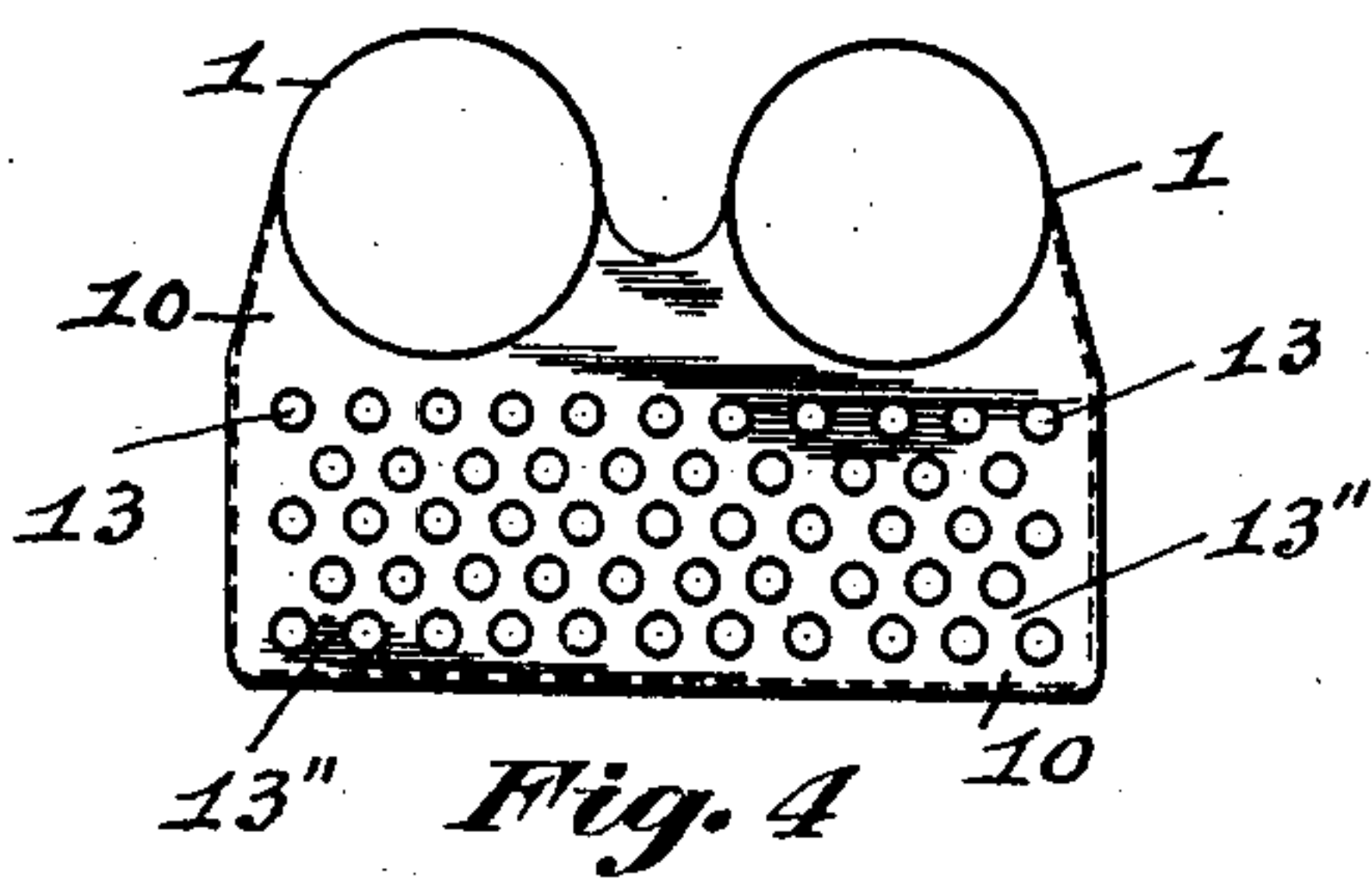


Fig. 4

Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN M. PEARSON, OF BELLEVUE, PENNSYLVANIA, ASSIGNOR TO PEARSON MANUFACTURING COMPANY, OF ALLEGHENY, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BOILER.

SPECIFICATION forming part of Letters Patent No. 771,570, dated October 4, 1904.

Application filed January 18, 1904. Serial No. 189,403. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. PEARSON, a resident of Bellevue, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Boilers; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to boilers, and has special relation to the class of water-tube steam-boilers.

The object of my invention is to provide a cheap and simple construction of a water-tube boiler which can be easily cleaned and repaired, combined with efficiency, durability, safeness, and economy in fuel.

My invention consists, generally stated, in the novel arrangement, construction, and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved boiler, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal central section of a boiler constructed according to my invention. Fig. 2 is a cross-section of the same on the line *x x*, Fig. 1, looking in the direction of the arrow. Fig. 3 is a cross-section of the same on the line *y y*, Fig. 1, looking in the direction of the arrow. Fig. 4 is a cross-section of the same on the line *z z*, Fig. 1, looking in the direction of the arrow.

Like letters or symbols of reference herein indicate like parts in each of the figures of the drawings.

As illustrated in the drawings, 1 represents the main drums of the boiler, which are shown as being two in number and extend along in a horizontal plane and parallel with each other, while extending above and across these drums 1 is the ordinary steam-drum 2, which connects with drums 1 and has the usual steam-supply pipe leading thereto, pipe 3 leading therefrom, and the man-heads 3' at each end thereof. The front ends 4' of the drums 1 are provided with the usual man-heads 4,

and connected to and extending down from these front ends 4' is the front water-leg 5, while below this leg is the front supporting wall-plate 6, which has the fuel-opening 6' extending through the same and leading into the fire-chamber 7, located above the grate-bars 7, and below said grate-bars 7 is the ash-pit 7'.

Connected to and extending down from about the central portion 8' of the main drums 1 is the center or middle water-leg 8, which is supported upon a suitable foundation 9 by means of I-bars 9' and is provided with the man-heads 8'' at each end thereof, while connected to and extending down from the rear ends 10' of the main drums 1 is the rear water-leg 10, which is supported upon a suitable foundation 11 by means of the standard 11'. The middle water-leg 8 extends down below the front and rear water-legs 5 and 10, respectively, and extending through the chamber 12', formed by and between said front and middle water-legs 5 and 8, respectively, and above the fire-chamber 7' are the water-tubes 12, which connect the said legs 5 and 7 and lead from said front water-leg 5 downwardly at an incline to said middle water-leg 7, so as to form the openings or spaces 12'' between them. Extending through the smoke or combustion chamber 13', formed by and between the middle and rear water-legs 8 and 10, respectively, are the water-tubes 13, which are smaller in diameter than the tubes 12 and connect with the said legs 8 and 10. These water-tubes 13 lead upwardly at an incline from the middle water-leg 8 to the rear water-leg 10, so as to form the openings or spaces 13'' between them, and said spaces 13'' are larger than the spaces 12'' between the water-tubes 12.

When my improved boiler is in use, there is a circulation of water through the drums 1 down through the middle water-leg 10 and through the water-tubes 12 and 13 to the front and rear legs 5 and 10, respectively, which will cause a free and ample circulation from the center 8' to the forward ends 4' of the drums 1 and from the center 8' to the rear ends 10' of said drums 1, and thereby deposit-

ing all sediment within the middle or center water-leg 8. The flame and smoke from the fire-chamber 7' will pass through the spaces 12" around the water-tubes 12 and around the middle water-leg 8 into the chamber 13', where such flame and smoke will become heavier, and expanding will pass through the spaces 13" and around the water-tubes 13 to the stack.

Practical experience has proven that at the farthest part of the boiler from the fire-chamber there is required more area for combustion, so that by reason of the tubes 13 being smaller than the tubes 12 and the spaces 13" being larger than the spaces 12" the smoke will have freer passage and ample space for combustion.

It will be evident that in the use of my improved boiler the middle water-leg is so constructed that it can be cleaned easily and will allow the removal of all sediment therefrom as well as overcoming the possibility of burning the water-tubes connected thereto. It will also be evident that the parts are easily accessible from both outside and inside for cleaning or repairing and no special foundations or brickwork are required in setting the same in position. It will further be obvious that no parts or joints are exposed to extreme heat, thereby assisting to overcome expensive repairs, such as leaky or bent tubes, &c., as well as the bulging or burning of the sheets.

It will be understood that while two main drums are illustrated and described one or more than two can be used, and various other changes in the construction and design of the various parts of my improved boiler may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a water-tube boiler, the combination of the fire-chamber, a smoke or combustion chamber, a main drum, front, middle and rear water-legs connected to said drum, and water-tubes connecting the front and middle water-legs and the middle and rear water-legs, said first-named tubes leading downwardly at an incline from the front water-leg through the fire-chamber to the middle water-leg and said second-named tubes leading upwardly at an incline from the middle water-leg through the smoke or combustion chamber in the rear of the fire-chamber to the rear water-leg.

2. In a water-tube boiler, the combination of the fire-chamber, a smoke or combustion

chamber, a main drum, front, middle and rear water-legs connected to said drum, and water-tubes connecting the front and middle water-legs and the middle and rear water-legs, said first-named tubes leading downwardly at an incline from the front water-leg through the fire-chamber to the middle water-leg and being larger than the second-named tubes for forming larger spaces or openings around said second-named tubes and said second-named tubes leading upwardly at an incline from said middle water-leg through the smoke and combustion chamber in the rear of the fire-chamber to the rear water-leg.

3. In a water-tube boiler, the combination of a fire-chamber, a smoke and combustion chamber, a main drum, front and rear water-legs connected to said drum, a middle leg connected to said drum and having its lower end extending below the front and rear water-legs, and water-tubes connecting the front and middle water-legs and the middle and rear water-legs, said first-named tubes leading downwardly at an incline from the front water-leg through the fire-chamber to the middle water-leg and said second-named tubes leading upwardly at an incline from the middle water-leg through the smoke and combustion chamber in the rear of the fire-chamber to the rear water-leg.

4. In a water-tube boiler, the combination of a fire-chamber, a smoke and combustion chamber, a main drum, front and rear water-legs connected to said drum, a middle water-leg connected to said drum and having its lower end extending below the front and rear water-legs, and water-tubes connecting the front and middle water-legs and the middle and rear water-legs, said first-named tubes leading downwardly at an incline from the front water-leg through the fire-chamber to the middle water-leg and being larger than the second-named tubes for forming larger spaces or openings around said second-named tubes and said second-named tubes leading upwardly at an incline from said middle water-leg through the smoke and combustion chamber in the rear of the fire-chamber to the rear water-leg.

In testimony whereof I, the said JOHN M. PEARSON, have hereunto set my hand.

JOHN M. PEARSON.

Witnesses:

J. N. COOKE,
J. L. TREFALLER, Jr.