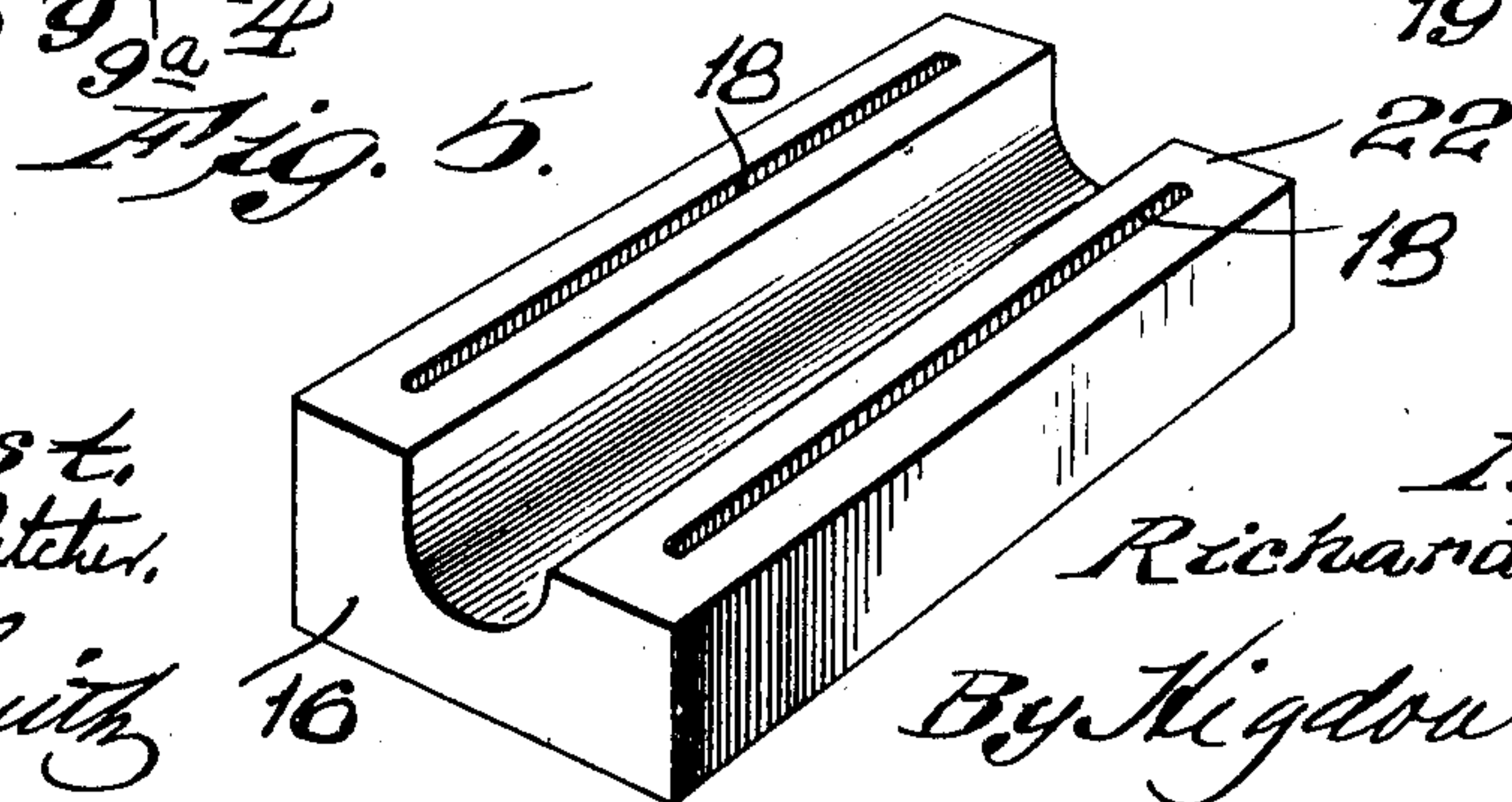
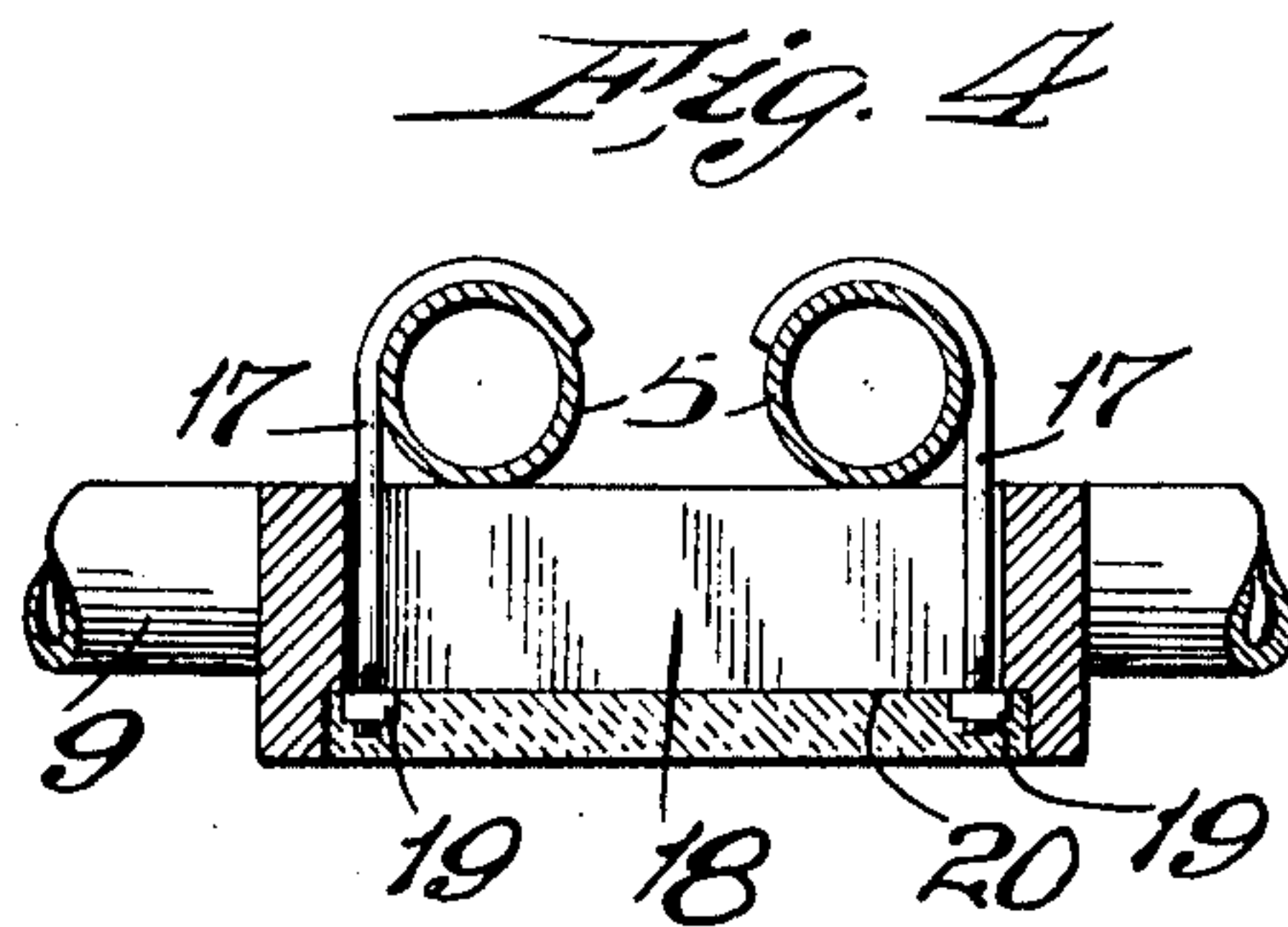
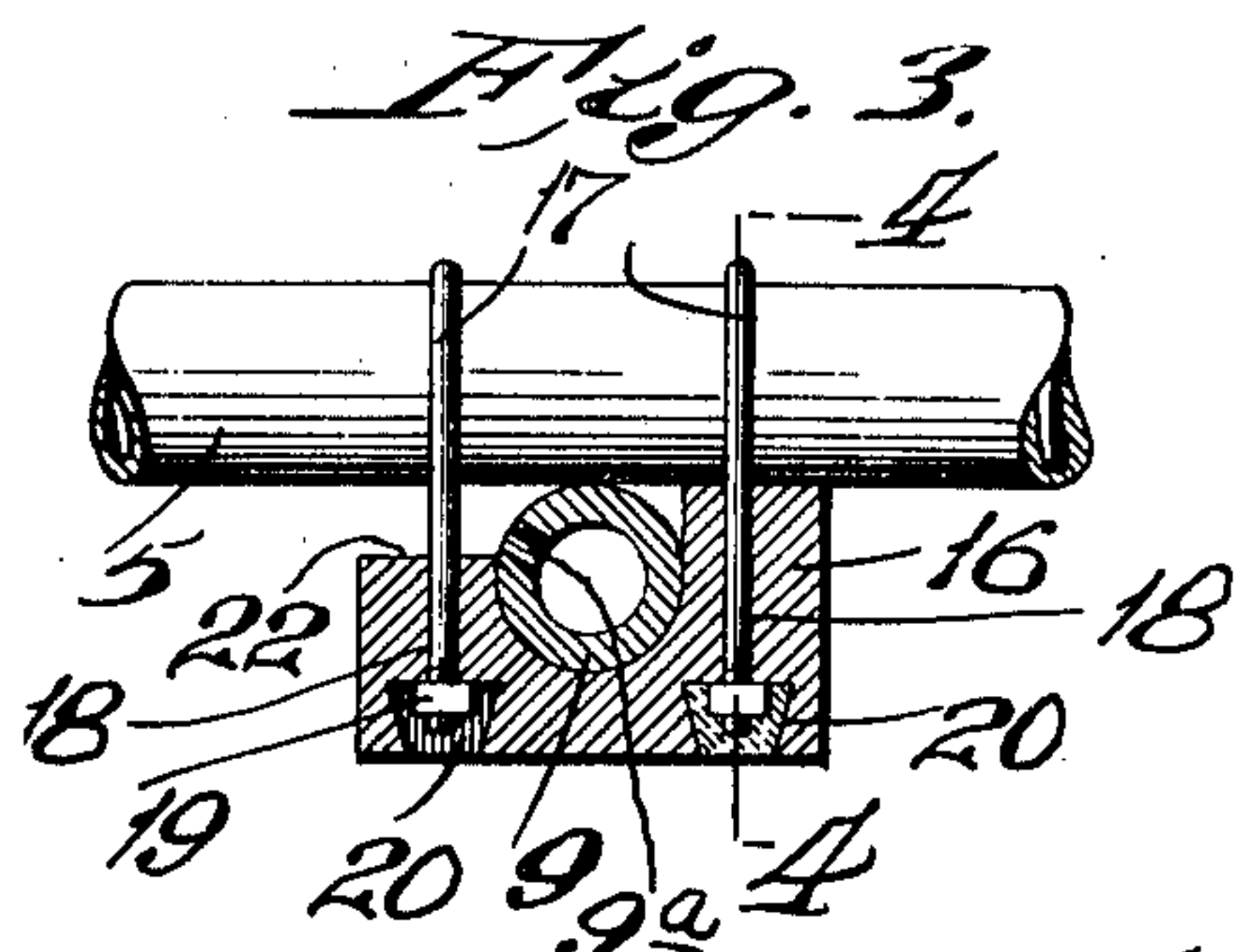
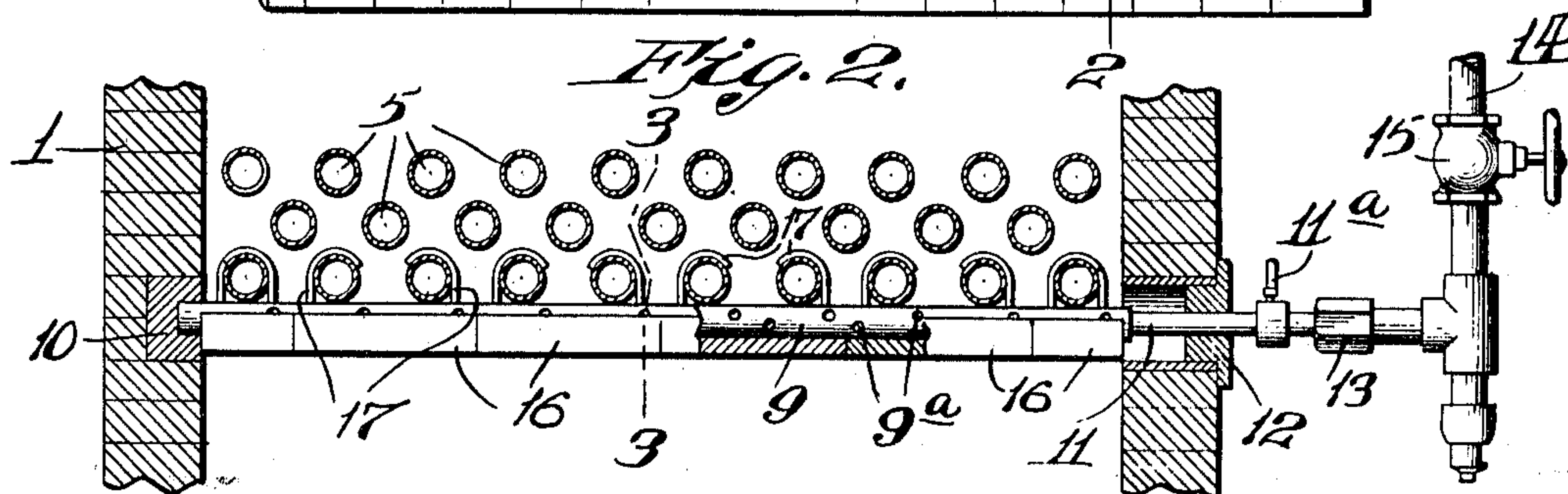
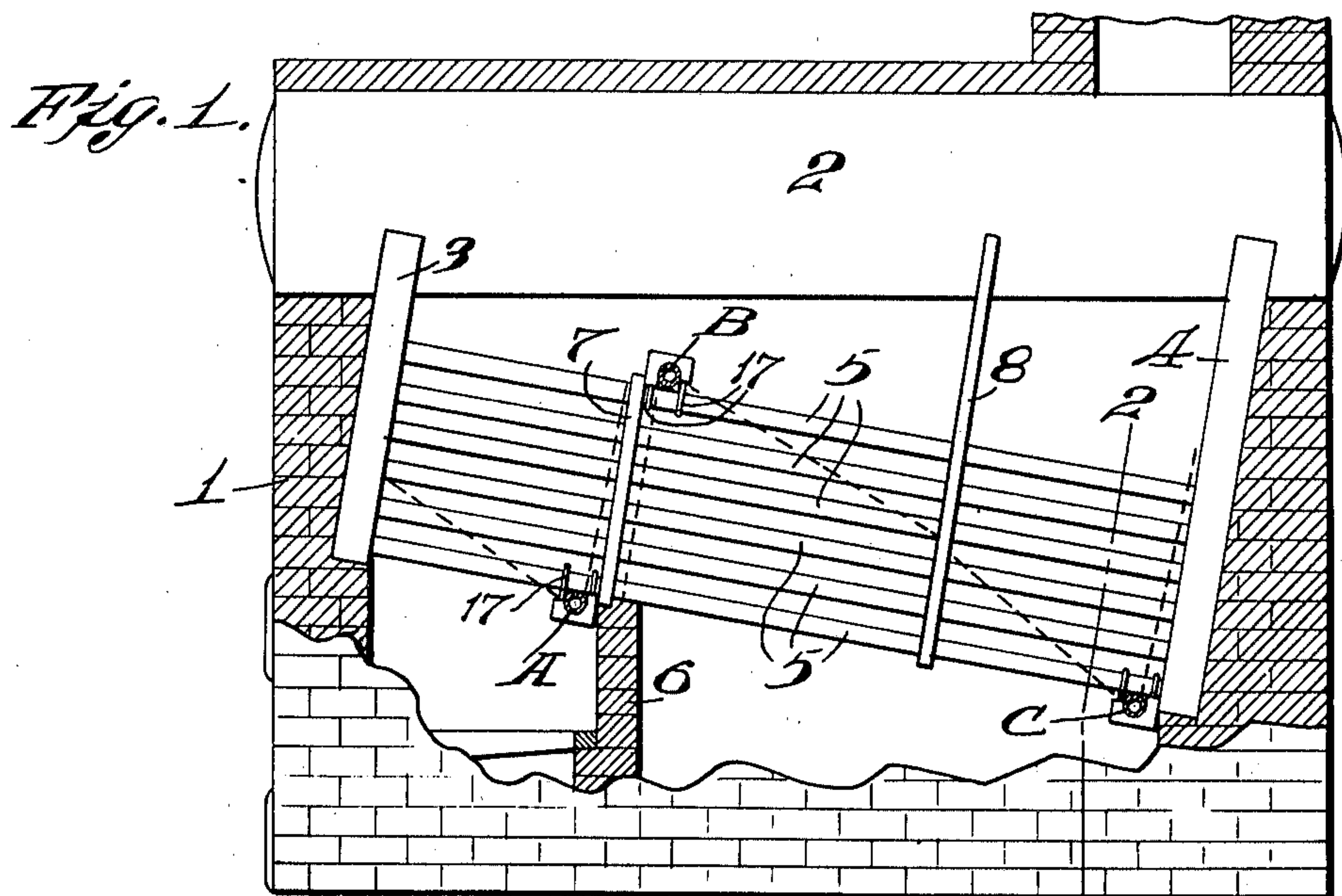


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BOILER TUBE CLEANER.
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955,871.

Patented Apr. 26, 1910.



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BOILER-TUBE CLEANER.

955,871.

Specification of Letters Patent.

Patented Apr. 26, 1910.

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To all whom it may concern:

Be it known that I, RICHARD W. HAMANN, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Boiler-Tube Cleaners, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to boiler tube cleaners, my object being to construct a simple apparatus particularly intended for use in connection with water tube boilers, and which apparatus is utilized for directing jets of steam or compressed air onto and between the water tubes of a boiler for the purpose of removing the soot, ashes and like accumulations which interfere with the natural draft and heating capacity of the boiler.

A further object of my invention is to arrange tubular nozzles on the interior of the boiler furnace for the purpose of directing jets of steam onto and between the water tubes, and which tubular nozzles are arranged in coverings of fire clay, tile, or the like, which protect said tubular nozzles from the intense heat and the direct action of the flames within the furnace.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation, partly in section, of a boiler furnace, the same being equipped with my improved cleaning apparatus; Fig. 2, is an enlarged vertical section taken on the line 2—2 of Fig. 1; Fig. 3 is an enlarged detail section taken on the line 3—3 of Fig. 2; Fig. 4 is a vertical section taken on the line 4—4 of Fig. 3; and Fig. 5 is a perspective view of one of the protecting members made use of in carrying out my invention.

Referring by characters to the accompanying drawings: 1 designates the boiler setting, 2 the boiler, 3 the front water leg, 4 the rear water leg, 5 the water tubes connecting the water legs, 6 the bridge wall, 7 the deflector plate located immediately over the bridge wall, and 8 the deflector

plate located a short distance in front of the rear water leg, all of which parts are of ordinary well known construction.

As shown in Fig. 1, I locate one of the tubular nozzles A immediately below the lowermost row of boiler tubes and in front of the upper end of the bridge wall 6, and a second tubular nozzle B is located on top of the uppermost row of water tubes immediately to the rear of the deflector plate 7, while a third tubular nozzle C is located below the lowermost row of water tubes and immediately in front of the lower end of the rear water leg 4. All of these tubular nozzles are alike in construction and operation, and therefore but one will be described in detail.

Each tubular nozzle comprises a pipe or tube 9, of sufficient length to extend entirely across the space within the furnace and one end of said tube is closed and is arranged to rock in a bearing 10 located in one of the side walls of the boiler setting, and the opposite end of this tube is connected to a pipe 11, which is arranged to rock in a bearing 12 located in the opposite side wall, and said pipe 11 being connected by a slip joint 13 to a fluid pressure supply pipe 14, in which is located a cut off valve 15.

Fixed on the pipe 11 is a handle 11^a, by means of which said pipe and the tubular nozzle 9 are rocked when in use.

The pipe 9 forming the tubular nozzle is provided with a row or rows of perforations, such as 9^a, and if desired these perforations may be staggered in order to direct the jets of steam or compressed air in different directions, thereby attaining greater cleaning efficiency. Each tubular nozzle is partially inclosed and protected by a series of blocks or tile 16, formed of fire clay or analogous fire-proof material, which blocks are held in position against the tubular nozzle by means of hooks 17, which engage the adjacent water tubes 5, the body portions of which hooks pass through slots 18 formed in said tile, and the ends of the body portions of said hooks receive nuts 19, which occupy dove-tailed grooves 20 formed in the under sides of the tile, and after the hooks have been properly attached and the nuts are tightened on the ends of said hooks, the grooves 20 are filled with plastic fire clay or like material, which hardens when dry.

The rows of protecting blocks or tile on the lowermost pair of tubular nozzles A and C are arranged beneath said nozzles in order to properly protect the same against the heat and flame passing through the furnace, whereas the blocks or tile on the tubular nozzle B are arranged on top thereof, to protect said nozzle from the heat and flame passing over the top of the deflector plate 7. The tops of the blocks or tile are cut away on one side of the nozzle, as designated by 22, in order that the jets of steam or compressed air issuing from the apertures 15 will be unobstructed, and said jets can be directed over a considerable boiler tube area, as shown by dotted lines in Fig. 1.

When a cleaning apparatus of my improved construction is in use, the valve 15 is opened to permit the flow of steam or compressed air through the supply pipe 14 and pipe 11 into the tubular nozzle 9, and the handle 11^a is now manually engaged to lock the pipe 11 and tubular nozzle 9, and during the locking motion jets of steam or compressed air issue from the apertures 15 and pass over and between the water tubes 5, thus blowing all soot, ashes and like accumulations from the surfaces of said tubes and causing said accumulations to be carried by the natural and forced draft into the stack leading from the furnace.

The blocks or tiles 16 cover the tubular nozzles 9 and protect the same from the heat and the direct action of the flame passing through the furnace.

A cleaning apparatus of my improved construction is comparatively simple, is easily installed, provides simple means for easily and quickly removing all accumulations from the water tubes of a boiler, and the tubular nozzles of the apparatus are thoroughly protected from the heat within the furnace.

I claim:

1. The combination with a water tube boiler and its setting, of a tubular nozzle transversely disposed adjacent the water tubes of the boiler, there being jet openings formed in said tubular nozzle, a fluid pressure supply pipe connected to said tubular nozzle, a heat and flame protecting cover partially inclosing the tubular nozzle and means for rocking the nozzle.

2. The combination with a water tube boiler and its setting, of a tubular nozzle transversely disposed adjacent the water tubes of the boiler, there being jet openings formed in said tubular nozzle, a fluid pressure supply pipe connected to said tubular nozzle, a heat and flame protecting cover partially inclosing the tubular nozzle, and means for holding the nozzle and cover in position on the boiler tubes.

3. The combination with a water tube boiler and its setting, of a tubular nozzle

transversely disposed adjacent the water tubes of the boiler, there being jet openings formed in said tubular nozzle, a fluid pressure supply pipe connected to said tubular nozzle, a heat and flame protecting cover partially inclosing the tubular nozzle, and means carried by the protecting cover and engaging the water tubes of the boiler for supporting said covering and nozzle.

4. The combination with a water tube boiler and its setting, of a series of tubular nozzles transversely disposed within the boiler setting adjacent the tubes thereof, there being jet openings formed in said tubular nozzles, fluid pressure supply pipes connected to said tubular nozzles, means whereby said nozzles are independently rocked, a covering of heat insulating material partially inclosing each tubular nozzle and means for securing the covering to the water tubes and nozzle.

5. The combination with a water tube boiler and its setting, of a series of tubular nozzles transversely disposed within the boiler setting adjacent the tubes thereof, there being jet openings formed in said tubular nozzles, fluid pressure supply pipes connected to said tubular nozzles, means whereby said nozzles are independently rocked, a sectional covering of heat insulating material partially inclosing each tubular nozzle, and means carried by the covers and engaging the boiler tubes for supporting said covers and holding the same in position on the tubular nozzles.

6. An apparatus of the class described, comprising a tubular nozzle adapted to be positioned within a boiler setting adjacent the water tubes of a boiler, which tubular nozzle is perforated, a fluid pressure supply pipe connected to said tubular nozzle and a sectional heat insulating cover for the nozzle.

7. An apparatus of the class described, comprising a tubular nozzle adapted to be positioned within a boiler setting adjacent the water tubes of a boiler, which tubular nozzle is perforated, a protecting member of fireproof material partially inclosing said tubular nozzle, a fluid pressure supply pipe connected to said tubular nozzle and hooks carried by the protecting member for securing it to the water tubes.

8. An apparatus of the class described, comprising a tubular nozzle adapted to be positioned in a boiler setting adjacent the water tubes of a boiler, there being a row of perforations formed in said tubular nozzle, a fluid pressure supply pipe connected to one end of the tubular nozzle, means whereby the tubular nozzle is rocked, a protecting covering of fireproof material partially inclosing the tubular nozzle and means carried by the covering for attachment to the water tubes.

9. An apparatus of the class described,

comprising a tubular nozzle adapted to be positioned in a boiler setting adjacent the water tubes of a boiler, there being a row of perforations formed in said tubular nozzle,
5 a fluid pressure supply pipe connected to one end of the tubular nozzle, means whereby the tubular nozzle is rocked, a sectional protecting covering of fireproof material partially inclosing the tubular nozzle, and
10 hooks carried by the protecting covering for

engaging the water tubes against which the tubular nozzle is positioned.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

RICHARD W. HAMANN.

Witnesses:

M. P. SMITH,
E. L. WALLACE.