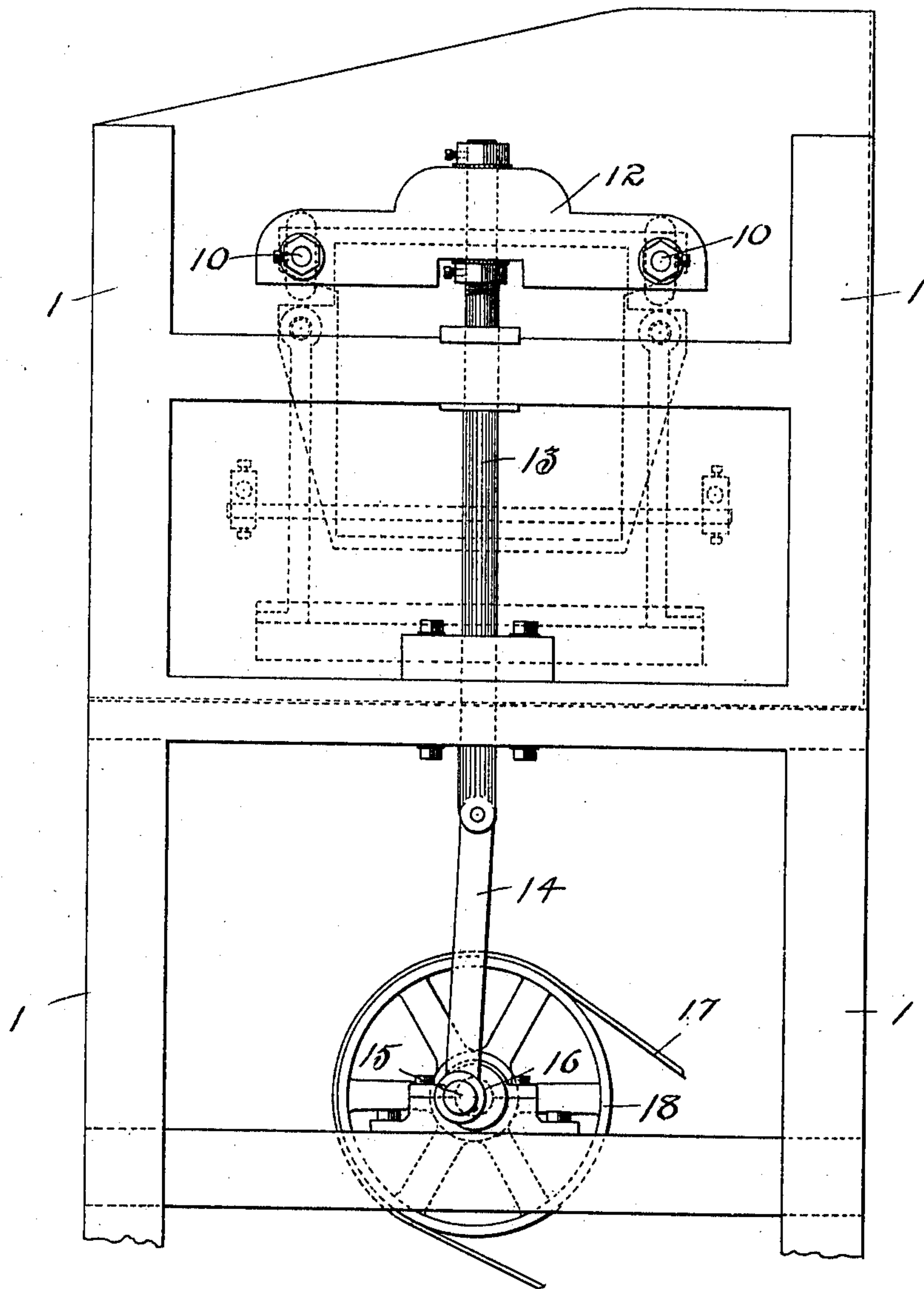


J. W. BRADSHAW.
BRUSH FILLING MACHINE.
APPLICATION FILED MAR. 8, 1909.

980,192.

Patented Jan. 3, 1911.

4 SHEETS—SHEET 1.



WITNESSES

J. Donebach,
J. Manning

FIG. 1

INVENTOR

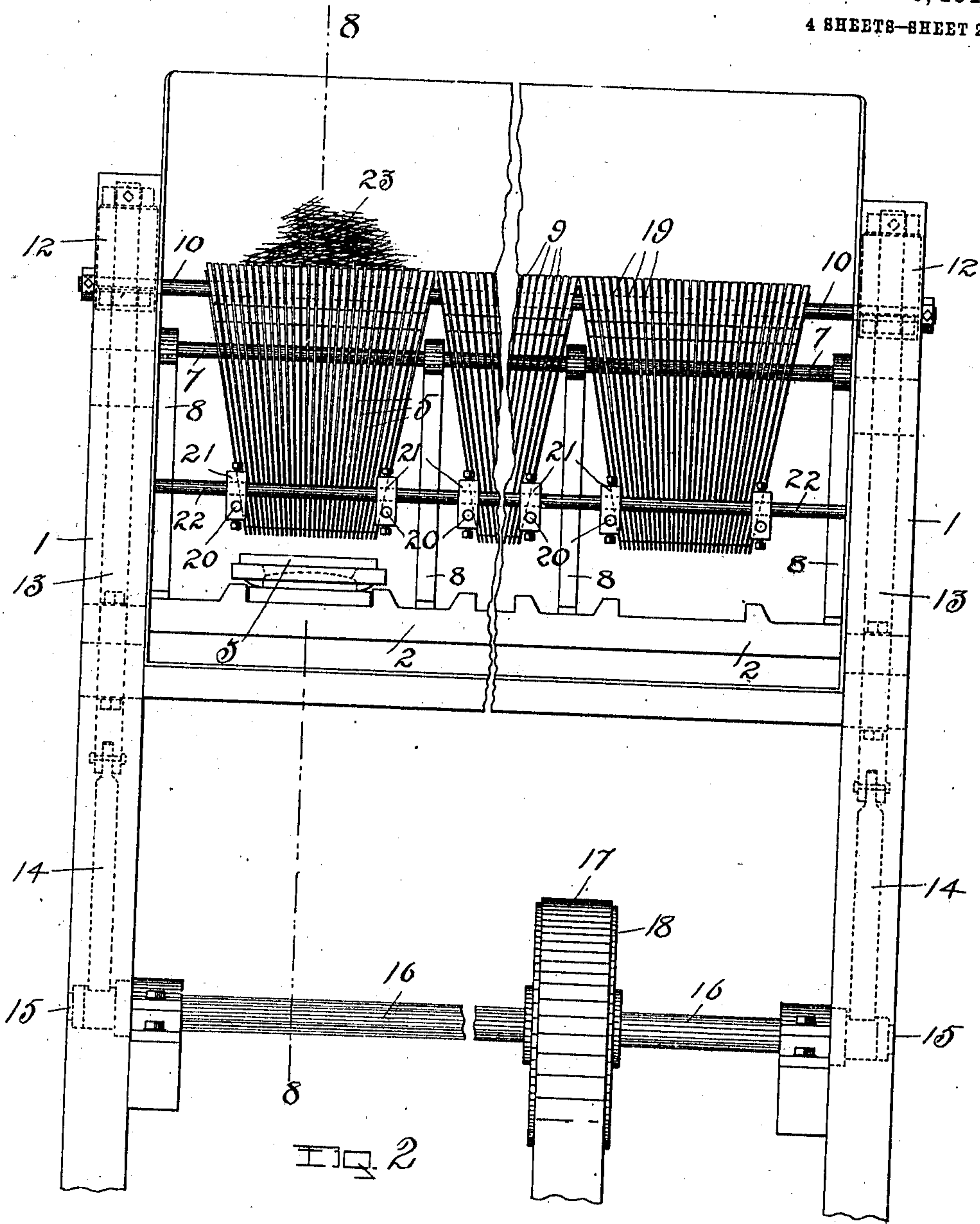
James W. Bradshaw,
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4 SHEETS—SHEET 2.



WITNESSES

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E. Manning

INVENTOR

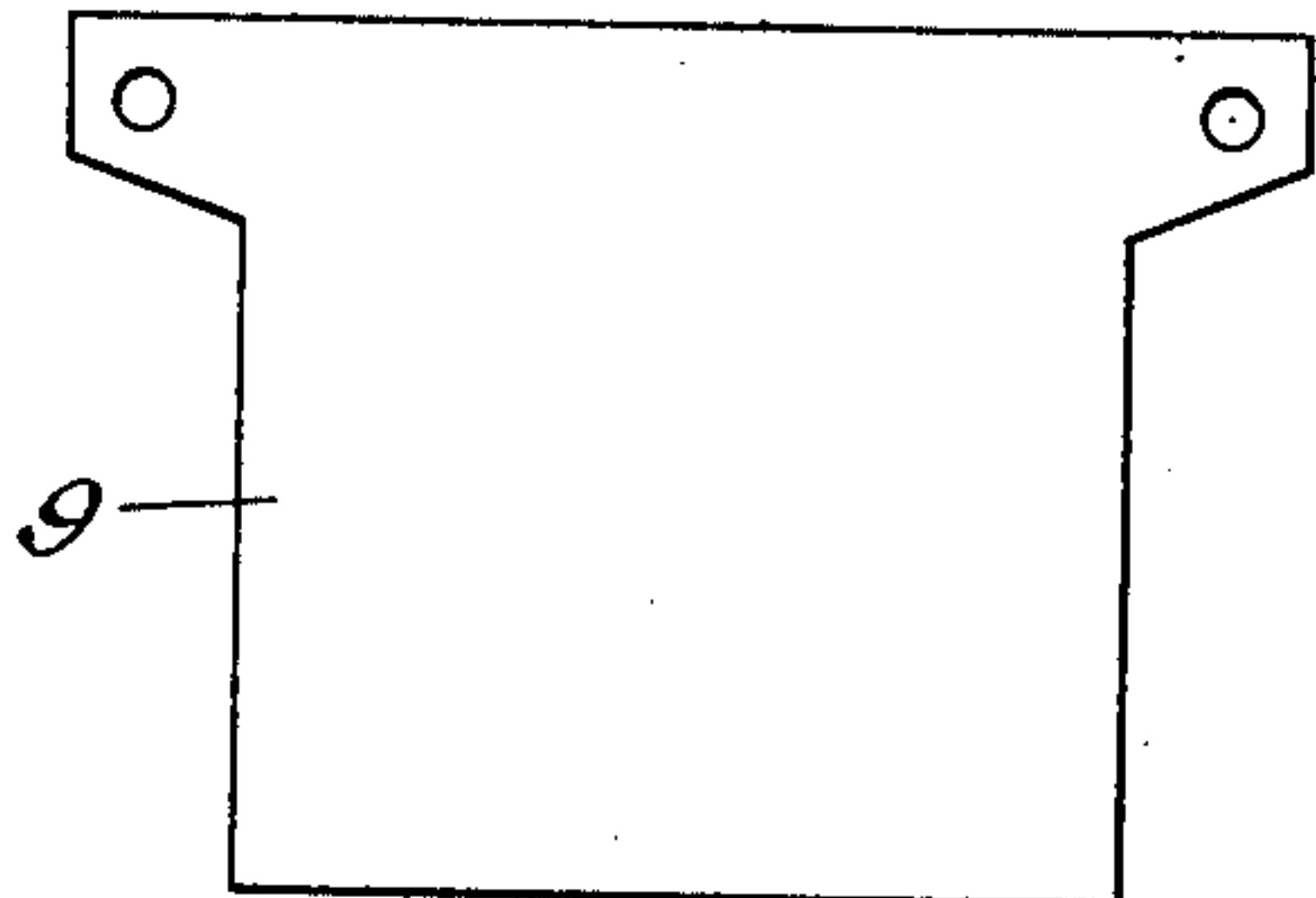
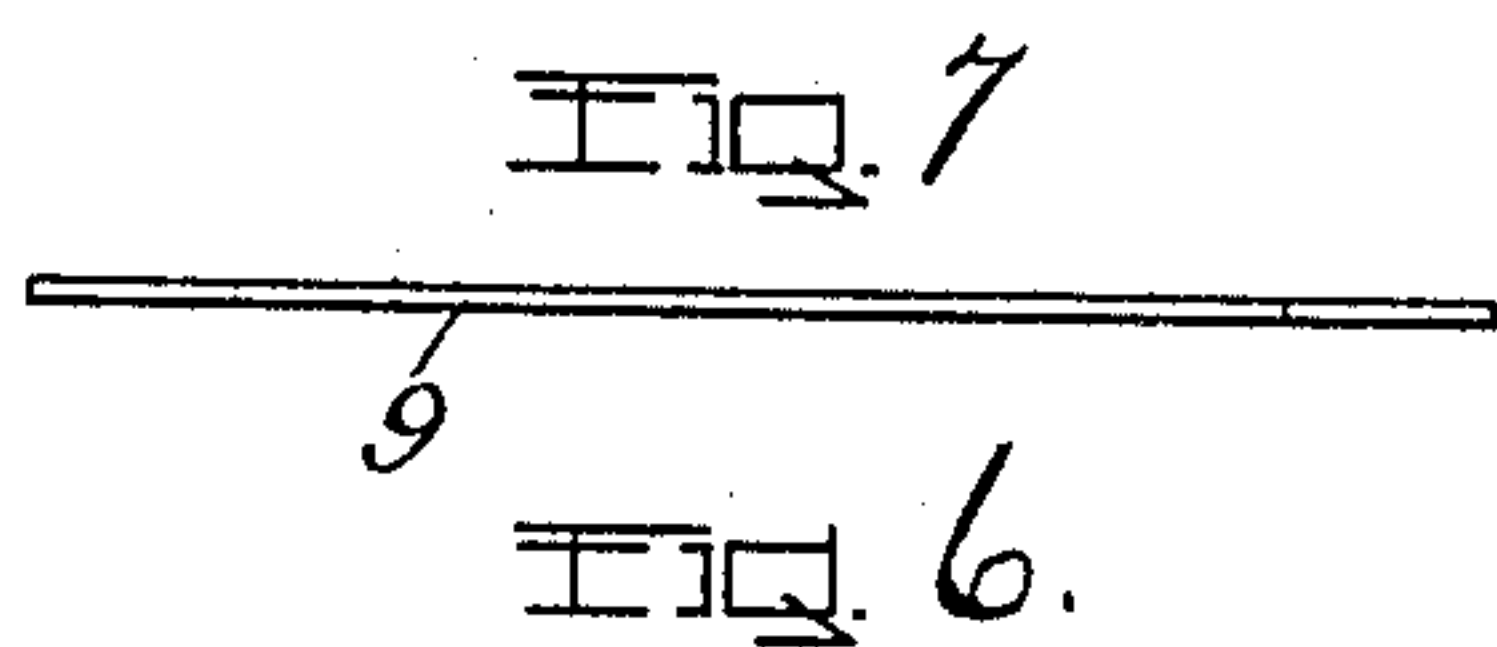
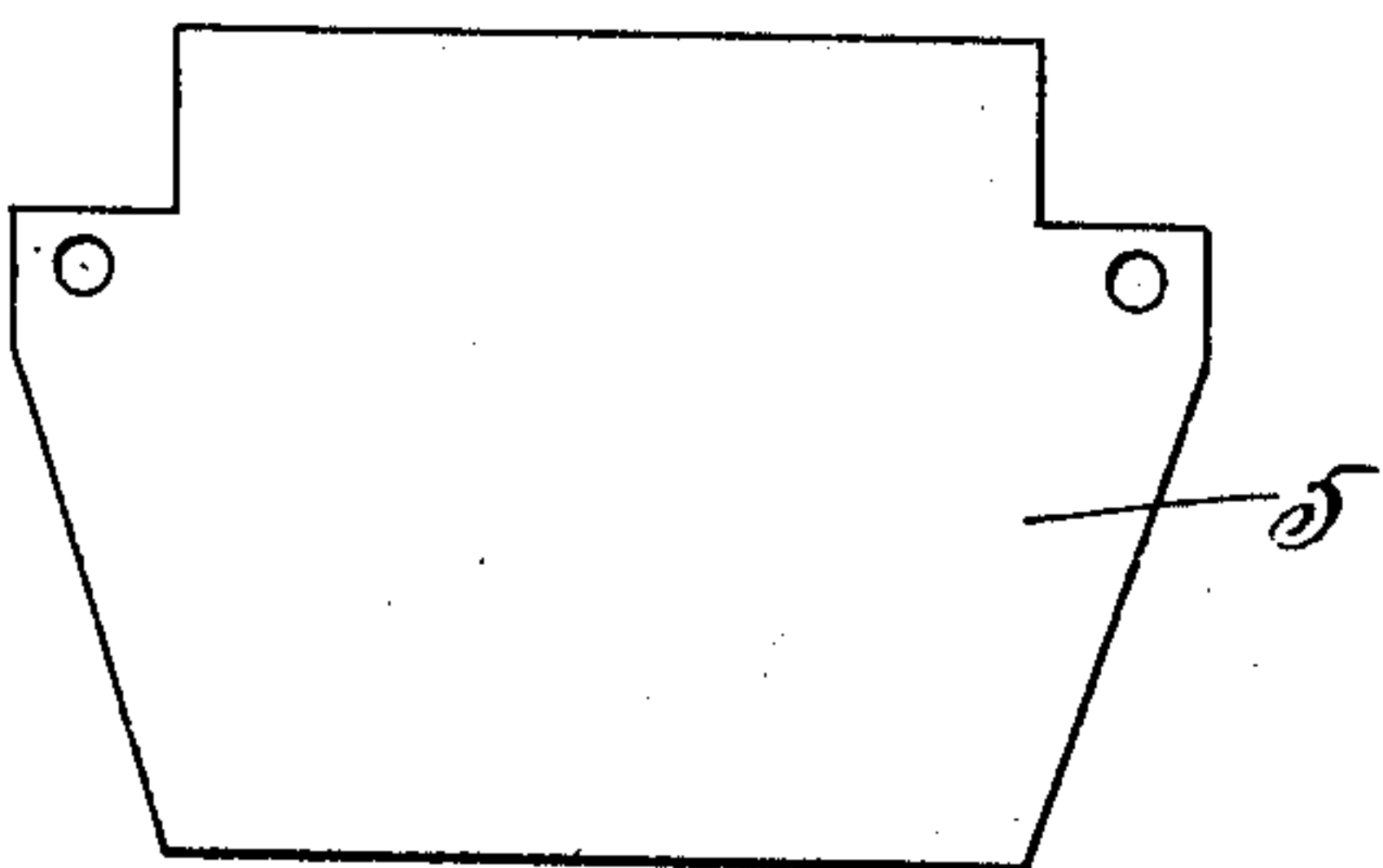
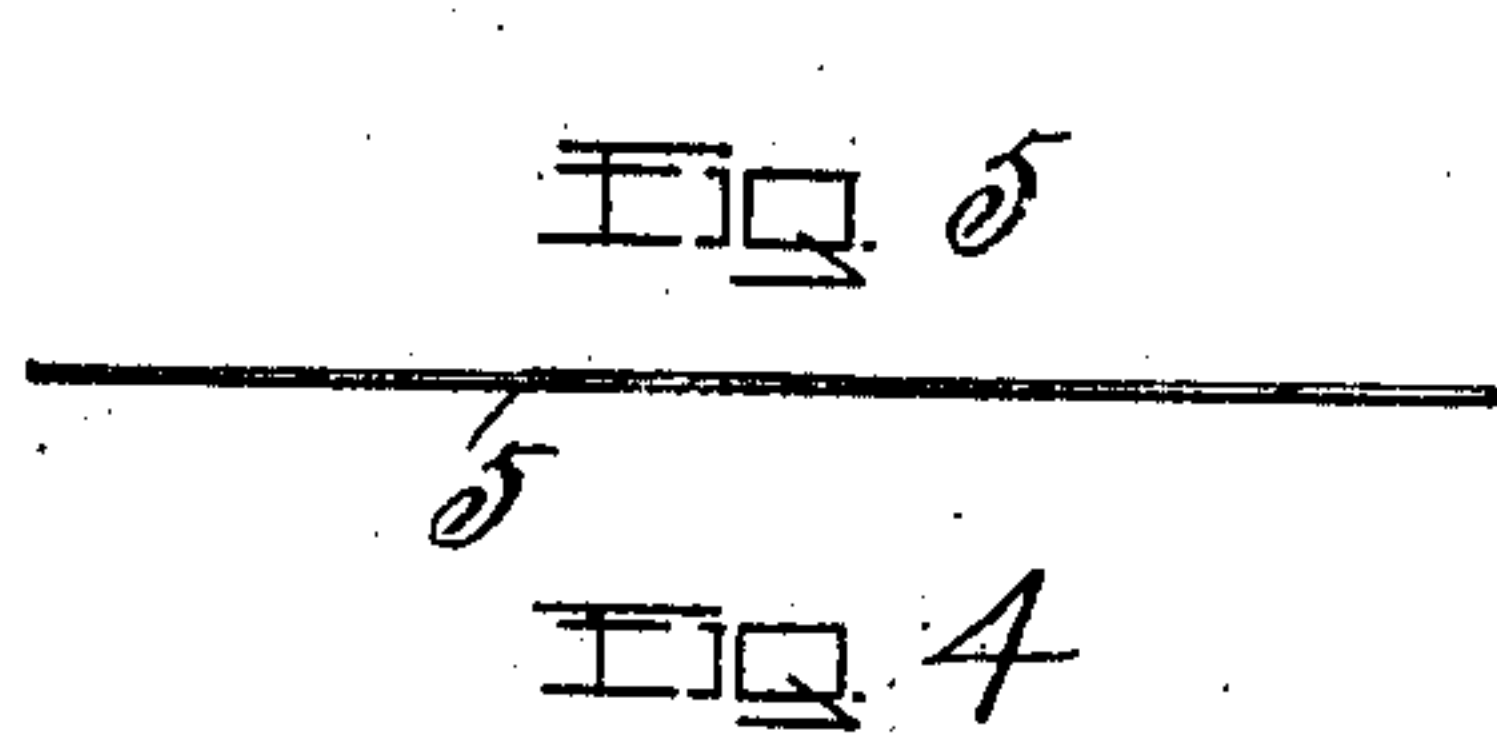
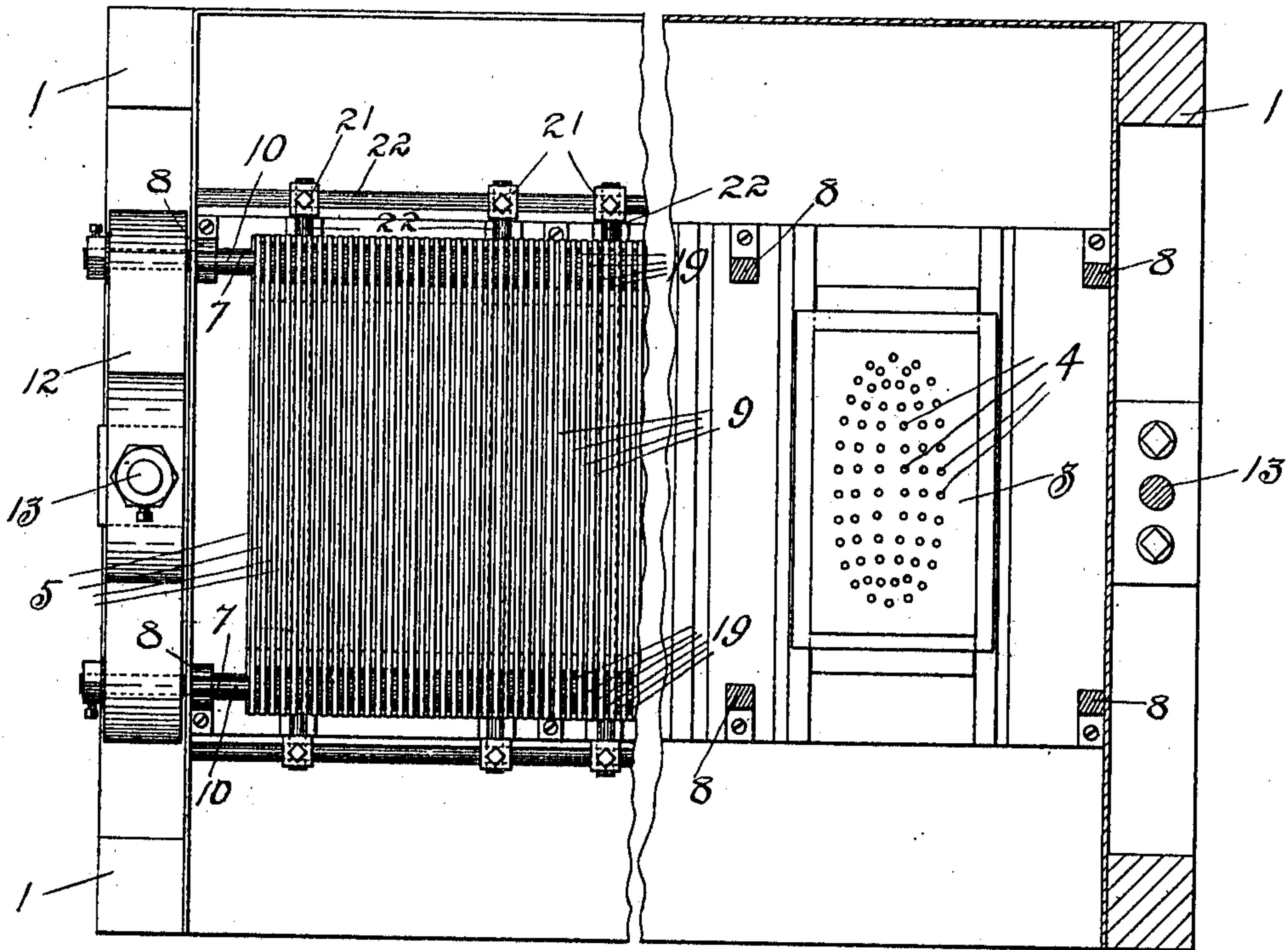
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4 SHEETS—SHEET 3.



WITNESSES

J. Donsbach.
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4 SHEETS—SHEET 4.

FIG. 8.

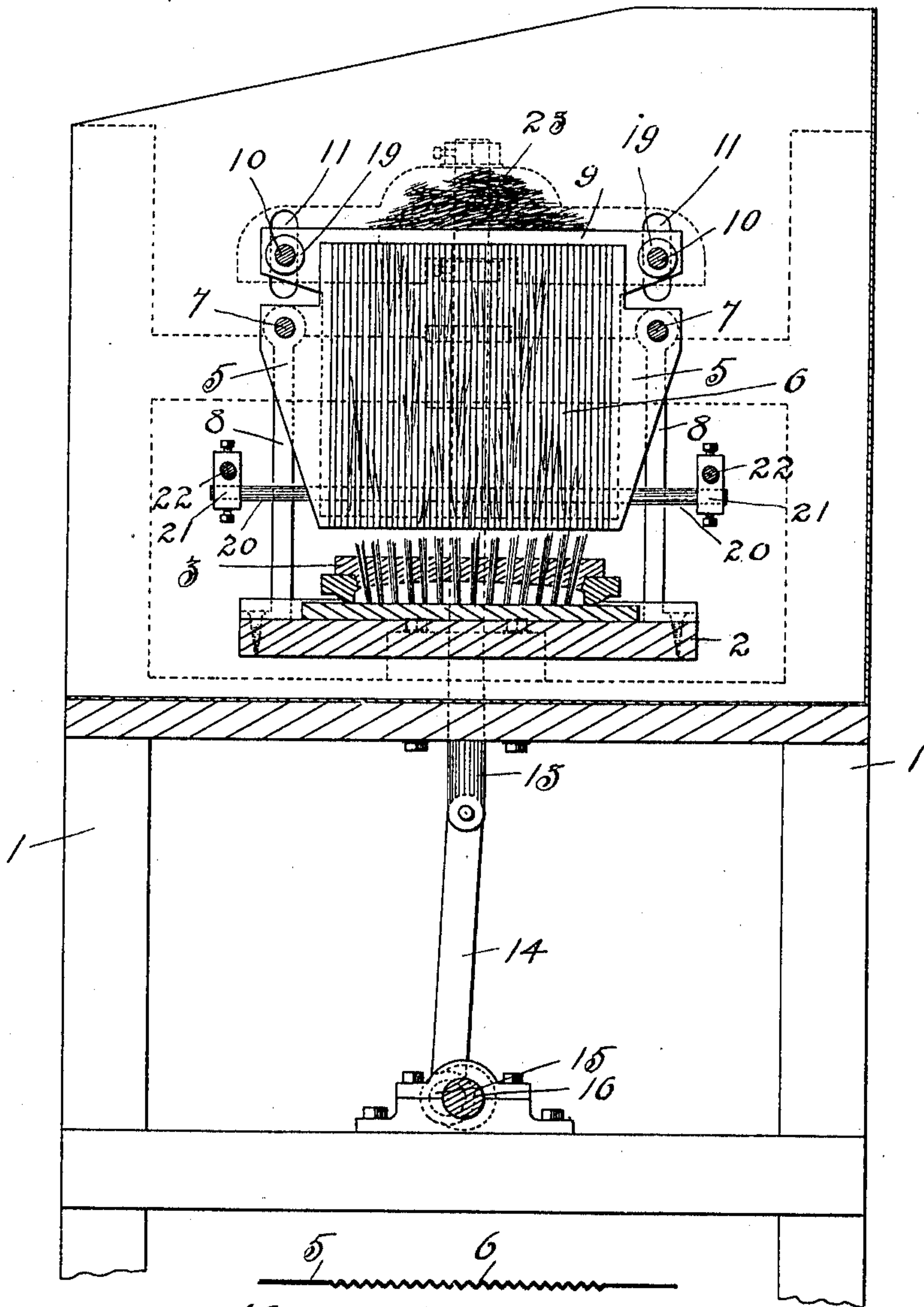


FIG. 10

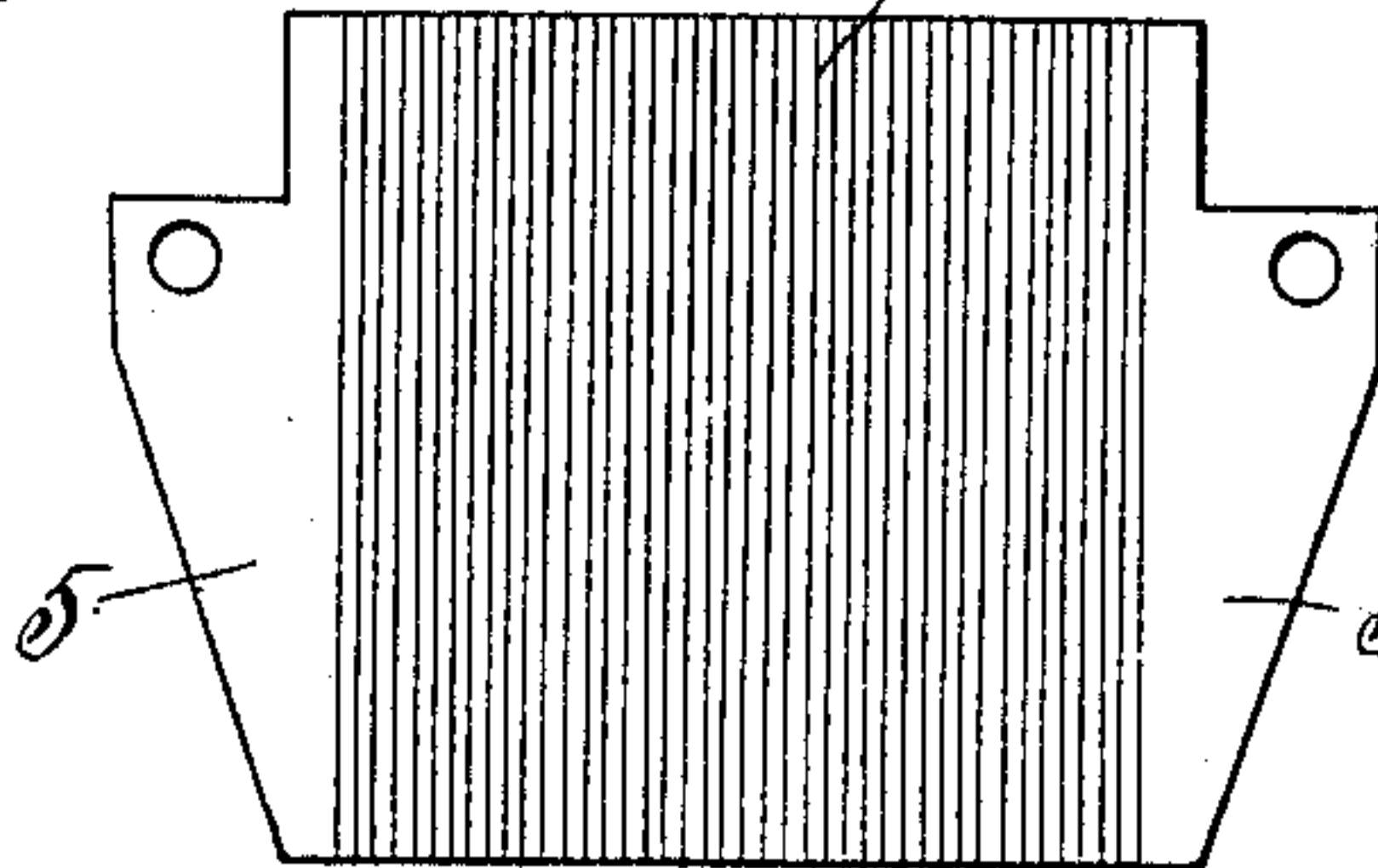


FIG. 9

INVENTOR
James W. Bradshaw.
By
Moser & Curtis
Attys

WITNESSES

J. Donsbach.
G. Manning

UNITED STATES PATENT OFFICE.

JAMES W. BRADSHAW, OF TROY, NEW YORK, ASSIGNOR TO UNIVERSAL BRUSH COMPANY, OF TROY, NEW YORK, A CORPORATION OF NEW YORK.

BRUSH-FILLING MACHINE.

980,192.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed March 8, 1909. Serial No. 482,004.

To all whom it may concern:

Be it known that I, JAMES W. BRADSHAW, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Brush-Filling Machines, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in end elevation of my improved brush-filling machine. Fig. 2 is a view in front elevation of the same. Fig. 3 is a top plan view of the same, partly broken away to show a top plan view of the apertured bristle-receiving plate. Fig. 4 is a view in side elevation of one of the stationary bristle-feeding plates detached. Fig. 5 is a top plan view of the same. Fig. 6 is a side view of one of the movable bristle-feeding plates detached. Fig. 7 is a top plan view of the same. Fig. 8 is a vertical cross-section of the machine taken on the broken line 8—8 in Fig. 2. Fig. 9 is a side view of a preferred corrugated form of bristle-feeding plate. Fig. 10 is a top plan view of the same.

The principal object of the invention is to efficiently feed bristles from a disordered mass into apertures in a receiving-plate wherein the bristles are grouped in an orderly manner in tufts adapted for incorporation in a brush by a suitable known method.

Other objects of the invention will appear in connection with the following description.

I have ascertained and demonstrated that bristles in a promiscuous mass can be brought into substantial parallelism by subjecting said bristles to a rubbing action between two plates, one having a reciprocating movement relatively to the other; and, in certain of its features, my invention relates to suitable mechanism for carrying this principle into effect, whereby I am able to automatically arrange in an orderly manner, and in small bunches, knots or tufts, bristles

delivered to the machine in a disordered or promiscuous mass.

Referring to the drawings wherein the invention is shown in preferred form, 1, is the frame of the machine upon which is mounted a bed, 2, adapted to support one or more bristle-receiving plates, 3, which plates are provided with numerous apertures, 4, adapted to receive and support the short lengths of bristles in small bunches or tufts adapted and arranged for incorporation in a brush, such as an ordinary hair-brush.

The plate, 3, may, for the purpose of some methods of making brushes, be the face-plate of a brush, or, for the purpose of certain other methods of making brushes, said plate may be merely a temporary receptacle for the bristles, from which they are subsequently withdrawn in the process of making the brush.

The bed, 2, may be fixed in position, but I do not wish to be limited in this respect. Above the bed, 2, are mounted two series of vertically-arranged plates.

The plates, 5, of one series are preferably formed with corrugations, 6, running from top to bottom thereof, and are supported in fixed position upon a pair of rods, 7, supported by uprights, 8, erected from the bed, 2, or other suitable support. The plates, 9, of the other series alternate with the plates, 8, and are carried by a pair of rods, 10, which pass through slotted apertures, 11, in the end-walls of the frame, and are mounted in the respective yokes, 12, each fixed upon the upper end of a vertically-arranged shaft, 13, reciprocatory in bearings in the frame of the machine, as shown in Fig. 1. The lower end of each shaft, 13, is connected by a pitman, 14, with a crank or eccentric, 15, on the drive-shaft 16. Rotary movements are imparted to the shaft, 16, by the belt, 17, through pulley, 18, fixed upon said shaft, whereby vertical reciprocating movements are imparted to the shaft, 13, yoke, 12, rods, 10, and plates 9.

The plates, 9, are spaced apart at their upper ends by intervening washers, 19, and the plates of both series converge toward their lower ends, whereat they are in close proximity to one another, being confined in such proximity to one another between a pair of rods, 20, carried by blocks, 21, adjustably mounted upon cross-bars 22.

In Fig. 2, I have shown three groups of

plates arranged as above described, each group being adapted for operation upon a single bristle-receiving plate, 3, the middle group being partly broken away for convenience of illustration. One or more of such groups may be employed in a single machine, but in each group I prefer to have the convergent arrangement herein shown and described, although, for certain purposes of the invention, it is not necessary that the plates should converge.

In the operation of the machine, a disordered mass of bristles, 23, is deposited upon the upper ends of a group of plates, 5 and 9, and a bristle-receiving plate, 3, is placed upon the bed, 2, beneath said group of plates. The plates, 9, are then caused by the means above described to reciprocate rapidly, while the plates, 5, remain stationary, causing the bristles, 23, to enter a few at a time between the plates, and to be subjected to the rubbing action thereof, which tends to bring the bristles into substantial parallelism, and to cause them to pass downward in vertical lines through the interstices formed by the corrugations in the plates, 5, and thence from between the lower ends of the rubbing-plates into the apertures in the subjacent bristle-receiving plate 3.

Any desired number of plates, 5 and 9, may be grouped together.

For certain purposes of the invention, the corrugations may be omitted from the plates, 5, but, by providing said plates with corrugations, the accurate spacing apart of the plates at their lower ends, and the feeding of the bristles down between the plates, is facilitated.

By the convergent arrangement of plates shown, a considerable space is provided between the plates at their upper ends for the reception of the bristles from the mass 23.

The plates, 5 and 9, may be made of any suitable material, as sheet-metal or fiber.

What I claim as new and desire to secure by Letters Patent is—

1. In a machine of the class described, and in combination, vertically-arranged bristle-feeding plates in close proximity to one another side by side, with a bristle-receiving space therebetween, one vertically reciprocatory relatively to another; means for rapidly reciprocating one of said plates relatively to another in close proximity thereto and a support for a bristle-receiving plate subjacent to the lower ends of said bristle-feeding plates.

2. In a machine of the class described, and in combination, vertically-arranged bristle-feeding plates in close proximity to one another, one vertically reciprocatory relatively to another, means for rapidly reciprocating one of said plates relatively to another in close proximity thereto and one being provided with vertically-arranged corruga-

tions; and a support for a bristle-receiving plate subjacent to the lower ends of said bristle-feeding plates.

3. In a machine of the class described, and in combination, vertically arranged bristle-feeding plates in close proximity to, and downwardly convergent toward, one another, one vertically reciprocatory relatively to another; means for rapidly reciprocating one of said plates relatively to another in close proximity thereto and a support for a bristle-receiving plate subjacent to the lower ends of said bristle-feeding plates.

4. In a machine of the class described, and in combination, vertically-arranged bristle-feeding plates in close proximity to, and downwardly convergent toward, one another, one vertically reciprocatory relatively to another, one having vertically-arranged corrugations; means for rapidly reciprocating one of said plates relatively to another in close proximity thereto and a support for a bristle-receiving plate subjacent to the lower ends of said bristle-feeding plates.

5. In a machine of the class described, and in combination, two series of vertically-arranged bristle-feeding plates, the plates of one series alternating in close proximity with those of the other; means for imparting to the plates of one of said series vertically-reciprocating movements; and a support for a bristle-receiving plate subjacent to the lower ends of said bristle-feeding plates.

6. In a machine of the class described, and in combination, two series of vertically arranged bristle-feeding plates, the plates of one series alternating in close proximity with those of the other; spacing-devices between the upper ends of the plates of one of said series; means for confining the lower ends of said plates to cause the plates to converge toward one another at their lower ends; means for imparting to the plates of one of said series vertically-reciprocating movements; and a support for a bristle-receiving plate subjacent to the lower ends of said bristle-feeding plates.

7. In a machine of the class described, and in combination, two series of vertically-arranged bristle-feeding plates, the plates of one series alternating in close proximity with those of the other, and the plates of one series having vertical corrugations; means for imparting to the plates of one of said series vertically-reciprocating movements; and a support for a bristle-receiving plate subjacent to the lower ends of said bristle-feeding plates.

8. In a machine of the class described, and in combination, two series of vertically-arranged bristle-feeding plates, the plates of one series alternating in close proximity with those of the other, and the plates of one series having vertical corrugations; spacing-

devices between the upper ends of the plates of one series; means for confining the lower ends of said plates to cause the plates to converge toward one another at their lower ends; means for imparting to the plates of one of said series vertically-reciprocating movements; and a support for a bristle-receiving plate subjacent to the lower ends of said bristle-feeding plates.

10 9. In a machine of the class described, and in combination, two series of vertically-arranged bristle-feeding plates, the plates of one series alternating in close proximity with those of the other; means for supporting

the plates of one of said series; a pair of 15 cross-bars carrying the plates of the other series; yokes in which the ends of said cross-bars are mounted; a pair of vertically-movable shafts connected with the respective yokes; a crank-shaft; cranks on said shaft; 20 and pitmen connecting the respective cranks with said vertically-movable shafts.

In testimony whereof, I have hereunto set my hand this 5th day of March, 1909.

JAMES W. BRADSHAW.

Witnesses:

FRANK C. CURTIS,
J. DONSBACH.