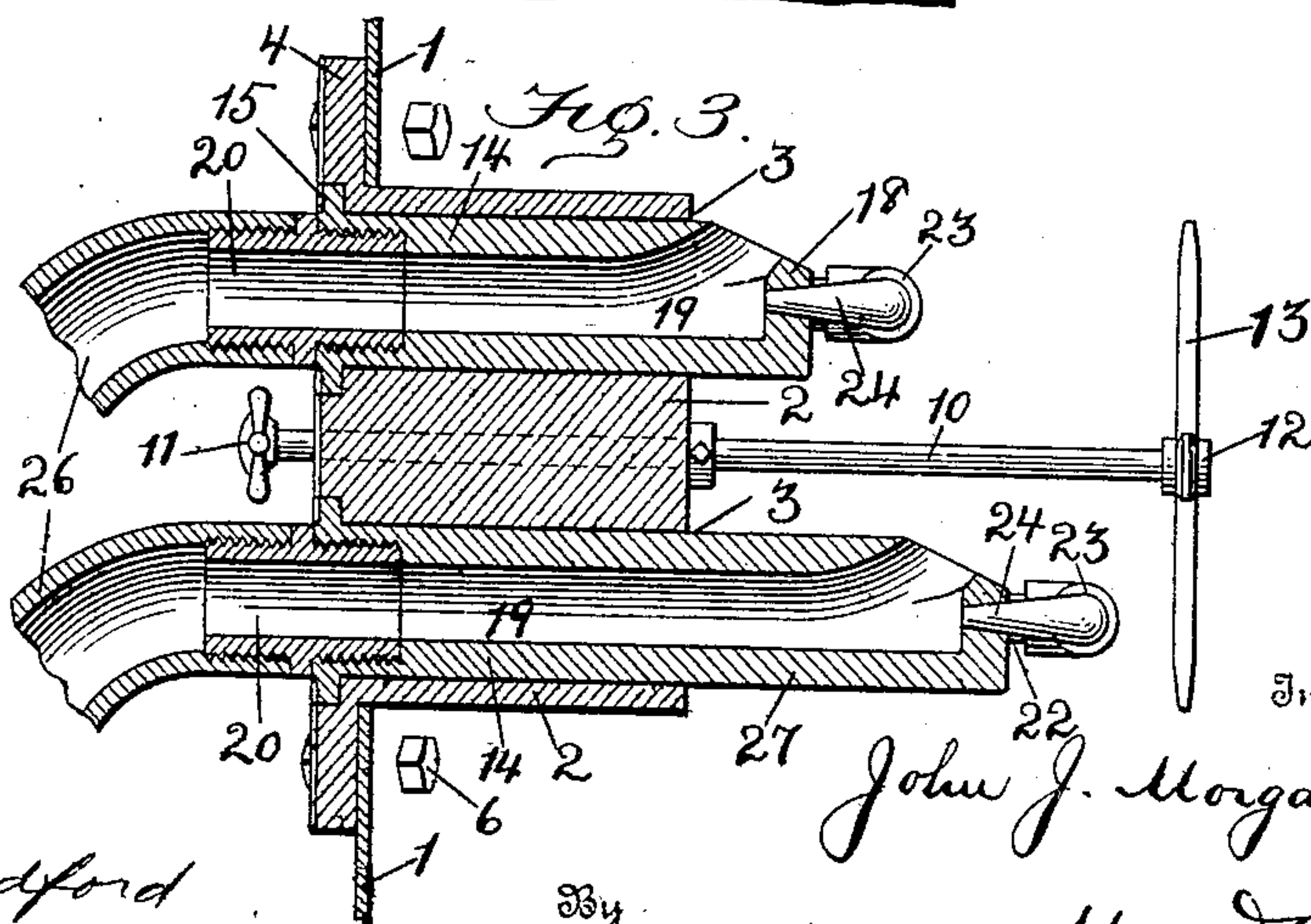
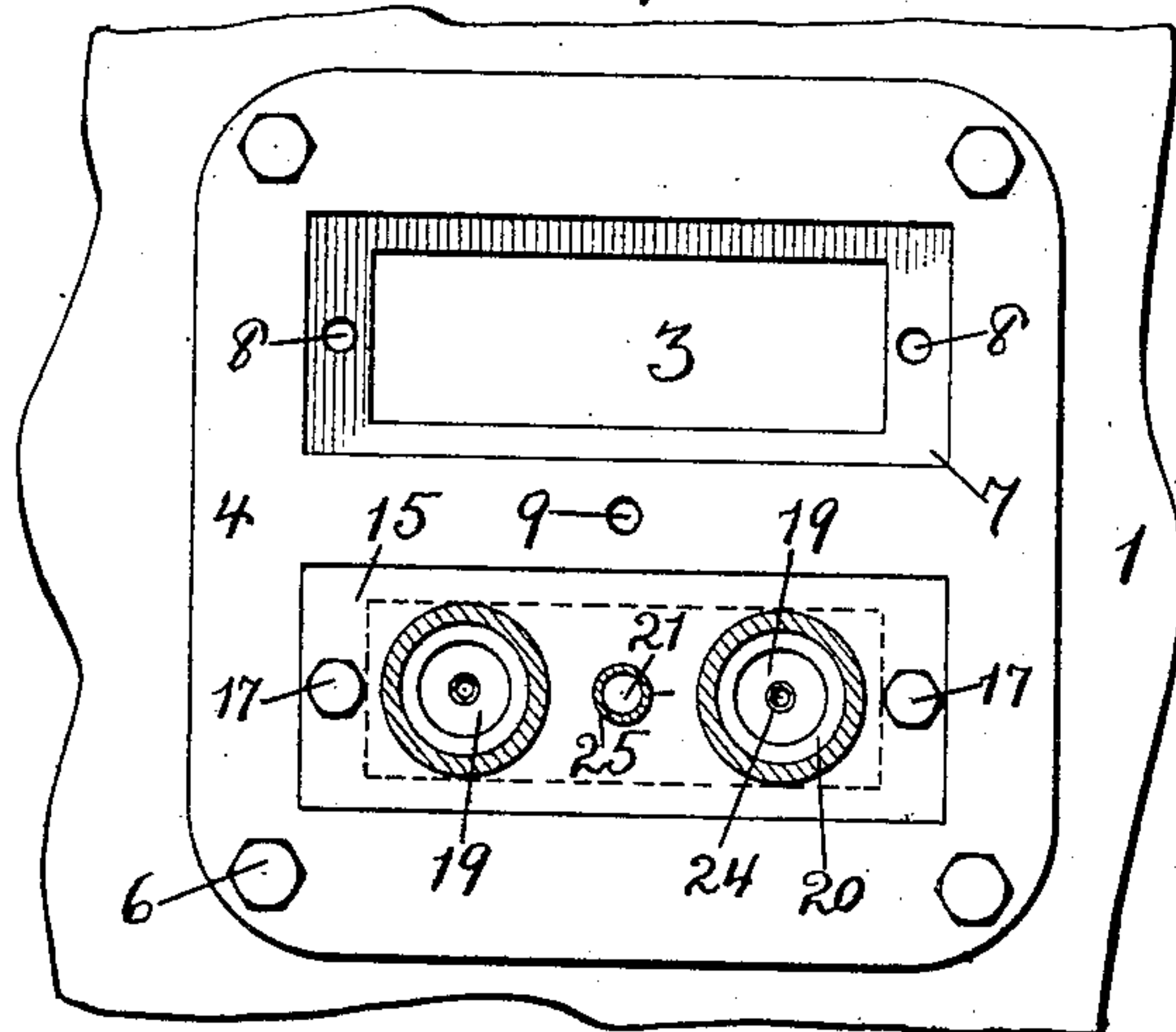
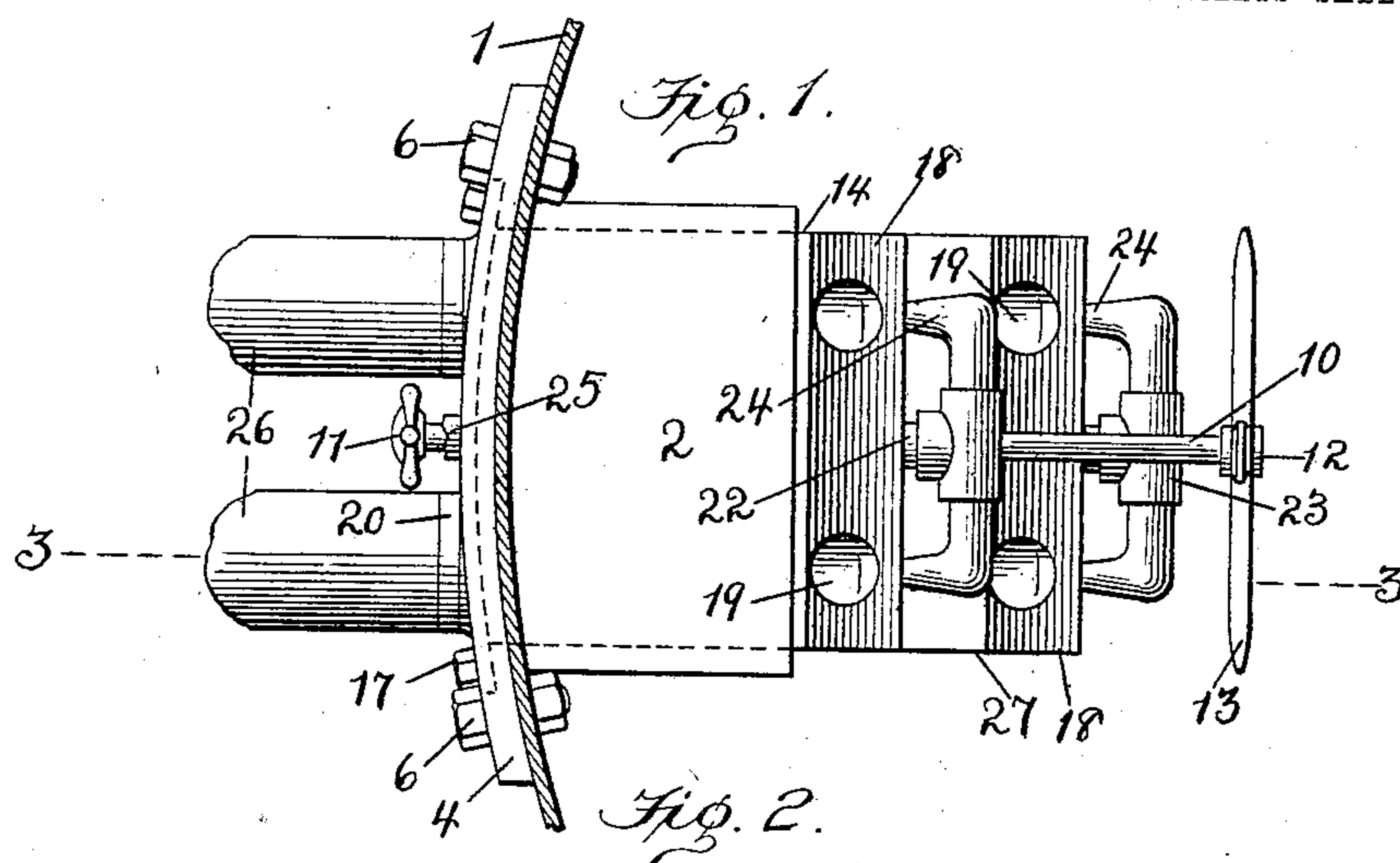


No. 831,970.

PATENTED SEPT. 25, 1906.

J. J. MORGAN.
PNEUMATIC SANDER.
APPLICATION FILED JUNE 19, 1906.

3 SHEETS—SHEET 1.



Witnesses
Edwin L. Bradford
S. Ferdinand Vogt.

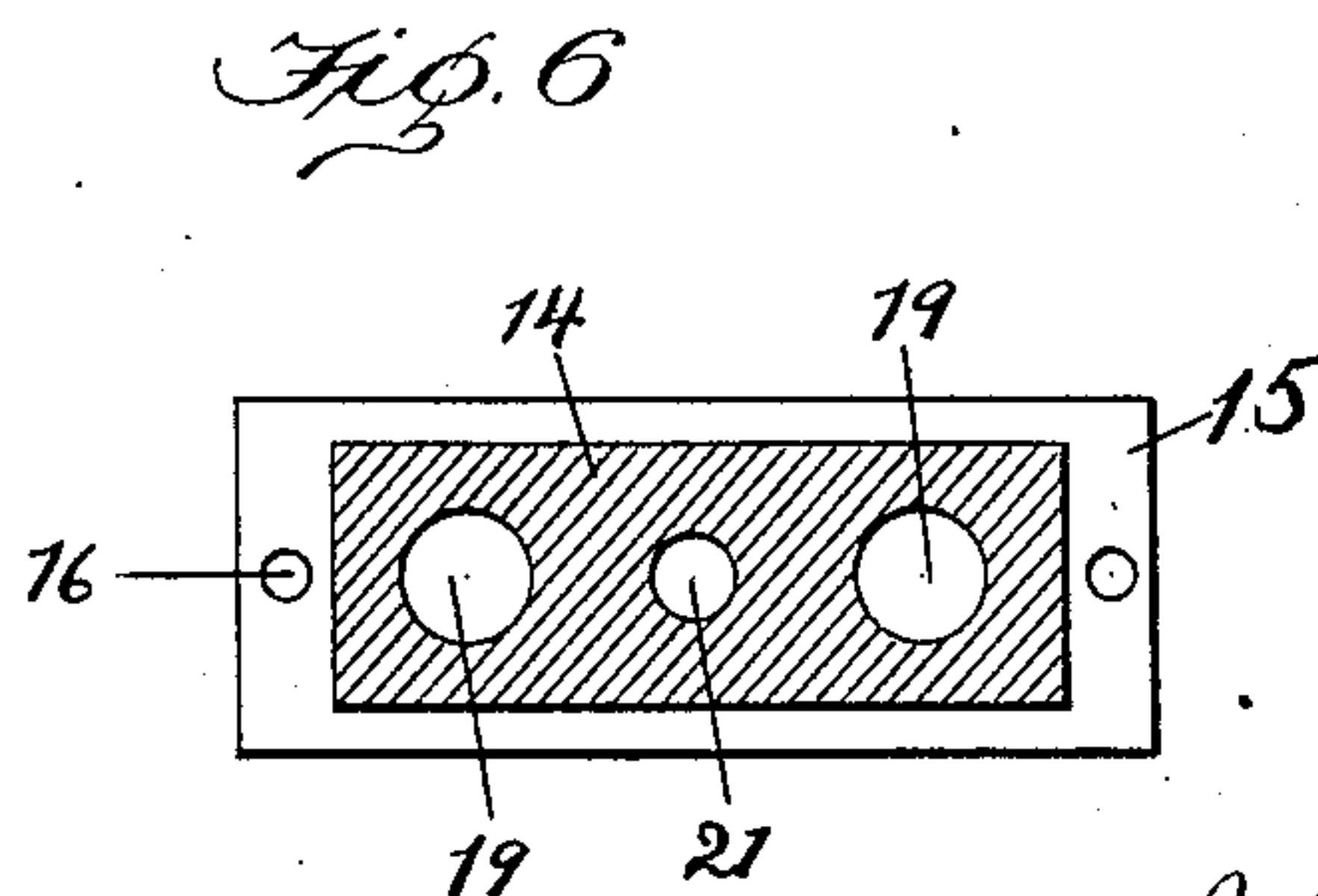
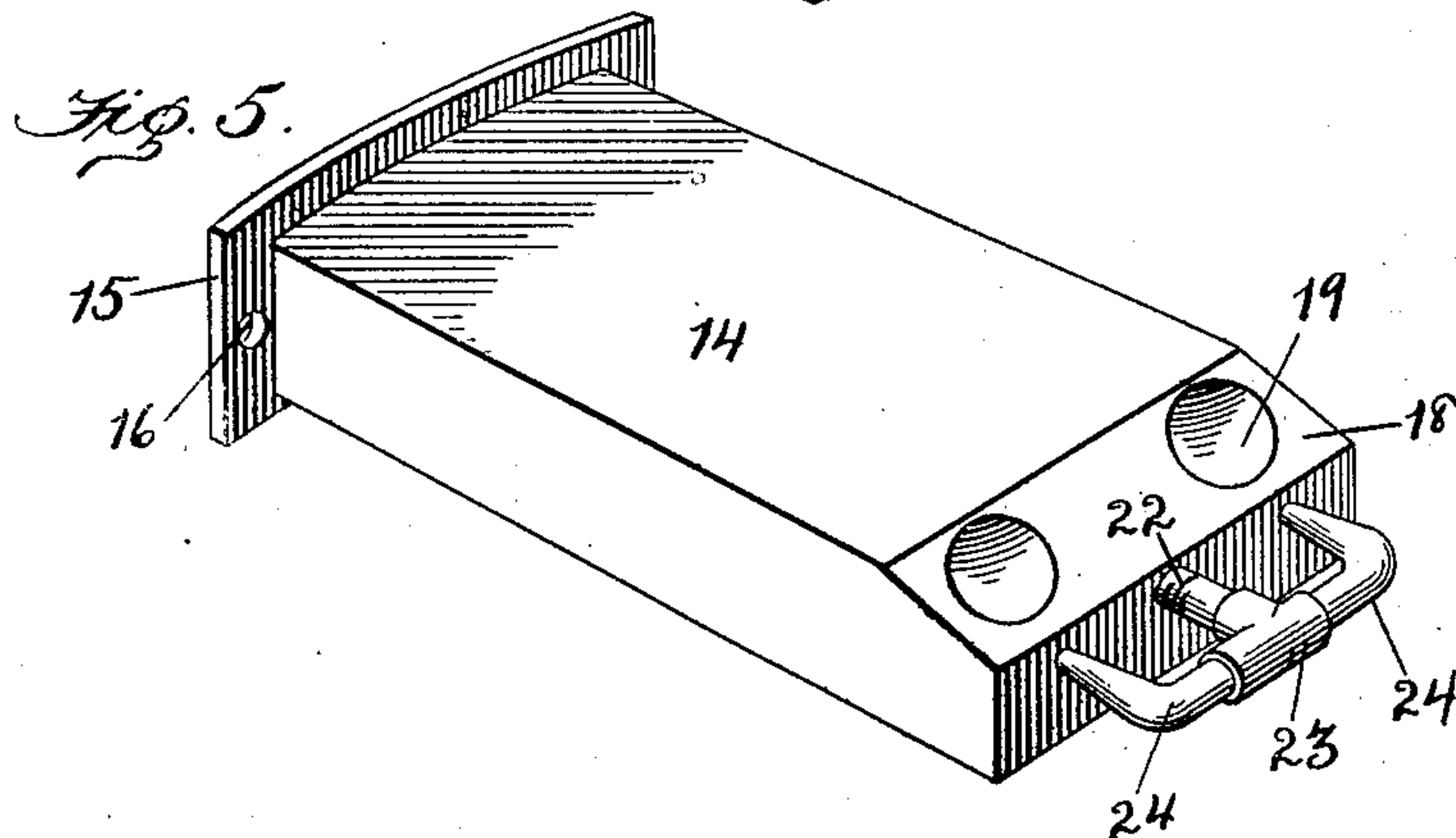
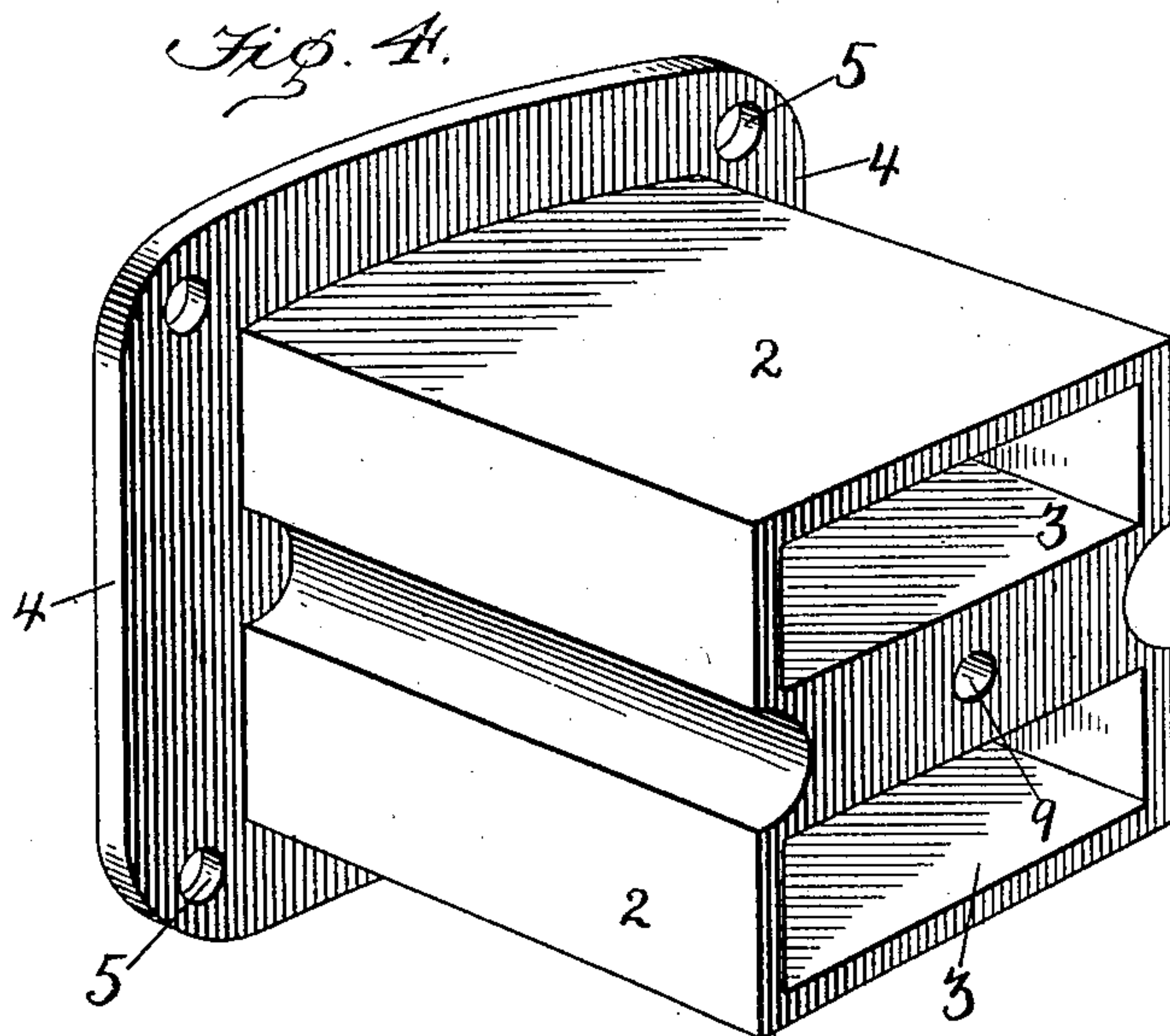
Inventor
John J. Morgan
Mann & Co.,
Attorneys

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3 SHEETS—SHEET 2.



Witnesses

Edwin L. Bradford
S. Ferdinand Vogt.

By

Inventor
John J. Morgan
Mann & Co.,

Attorneys

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3 SHEETS—SHEET 3.

Fig. 7.

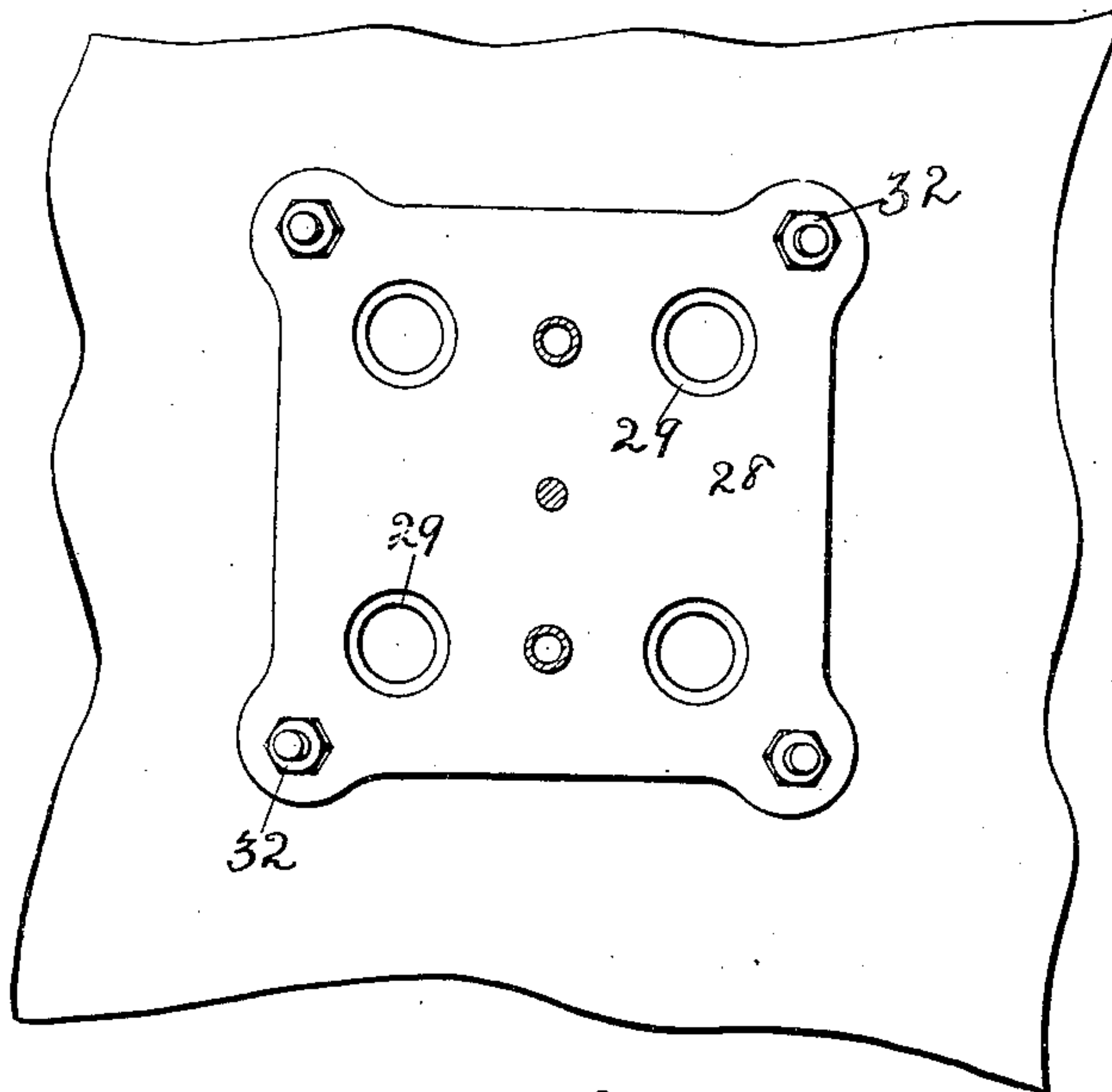
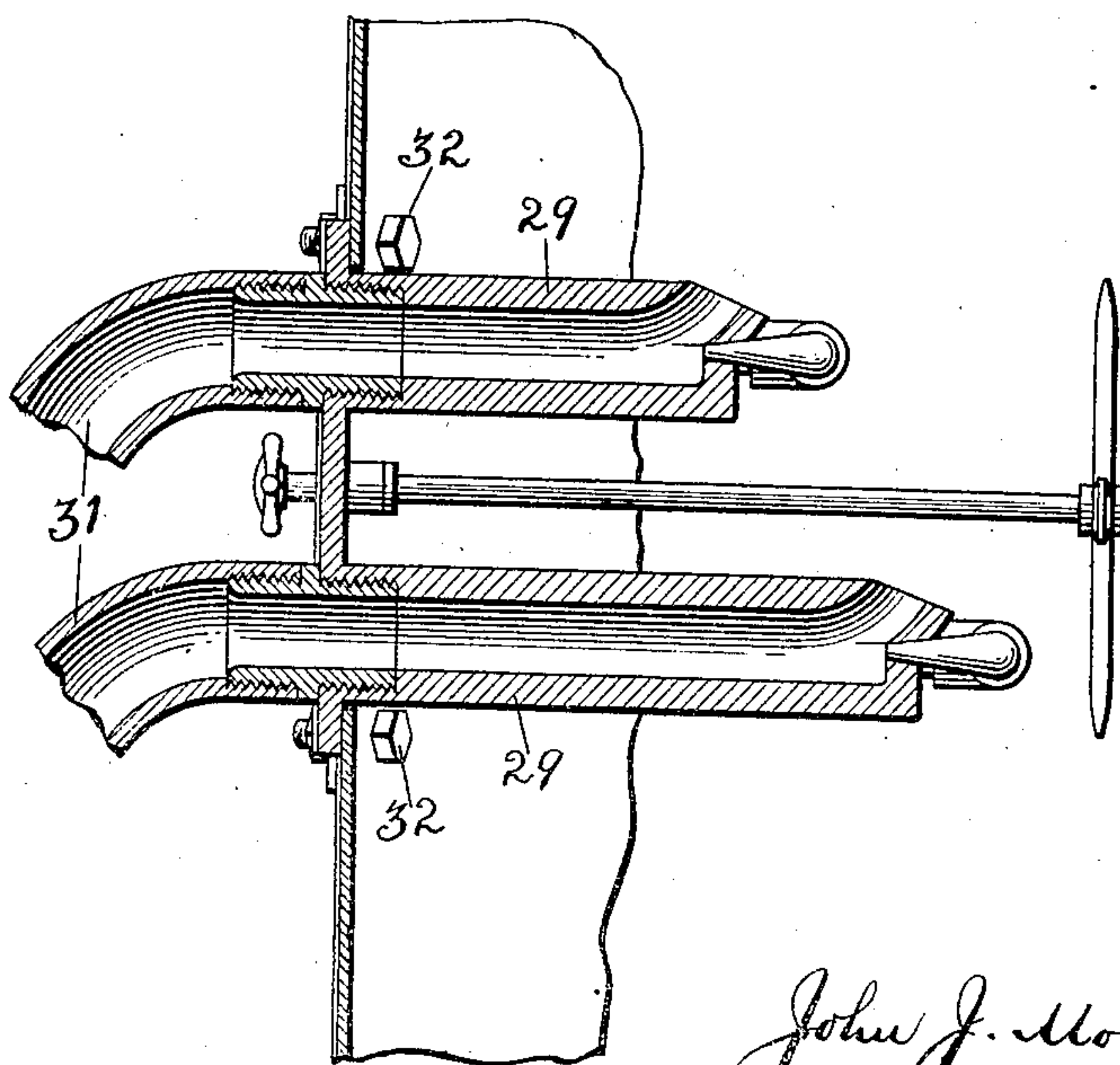


Fig. 8.



Witnesses

Edwin L. Bradford.
S. Ferdinand Vogt.

By

John J. Morgan. ^{Inventor}

Mann & Co.,

Attorneys

UNITED STATES PATENT OFFICE.

JOHN J. MORGAN, OF BALTIMORE, MARYLAND, ASSIGNOR TO JOHN C. HOOPER AND THOMAS M. HANSON, OF BALTIMORE, MARYLAND.

PNEUMATIC SANDER.

No. 831,970.

Specification of Letters Patent.

Patented Sept. 25, 1906.

Application filed June 19, 1906. Serial No. 322,398.

To all whom it may concern:

Be it known that I, JOHN J. MORGAN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Pneumatic Sanders, of which the following is a specification.

This invention relates to improvements in pneumatic track-sanders.

One object of the invention is to provide a sander in which the sand-delivery devices are sustained in the sand-box in such manner that they may be removed simultaneously.

Another object of the invention is to provide a construction whereby the air devices may be removed with the sand devices.

Another object is to provide a construction whereby a plurality of sand devices may be sustained at the same side of the box without obstructing the passage of the sand to the several sand devices.

Another object is to provide a construction whereby each pair of sand devices may be removed for inspection or repair independently of the others and also without permitting the sand to escape from the box.

Other objects and advantages resulting from the improved construction and combinations of devices will be pointed out in the specification and made the subject of special claims.

The accompanying drawings illustrate the invention, in which—

Figure 1 illustrates a plan view of the sander as the same would appear when attached to the wall of the sand-box. Fig. 2 shows a front elevation of the improved device and a portion of the sand-box wall. Fig. 3 illustrates a vertical section through the device, the section being taken on the line 3 3 of Fig. 1. Figs. 4 and 5 show perspective detail views of the housing and sand-distributing devices. Fig. 6 is a vertical sectional detail of one of the sand-distributing devices, and Figs. 7 and 8 illustrate two views of a modified form of device.

Referring to the drawings by numerals, 1 designates the vertical wall of the sand-box, which is provided with an opening in its side, which in the present instance is substantially square, but may be of any preferred shape. If the sander is to be applied to the box of a locomotive, the opening in the box will preferably be located at either the front or rear of

the box in order that the sand-pipes may be conveniently led down around the boiler to the front and rear drivers at opposite sides of the locomotive.

A housing or casing 2 conforms in shape to the opening of the sand-box, and said housing is provided with a plurality of horizontal compartments 3, one above the other. This housing is designed to be inserted in the opening of the sand-box and to project into the interior thereof, and the outer end of said housing has a flange 4, which projects laterally and seats against the exterior of the sand-box wall. Perforations 5 are provided in the housing-flange, and bolts 6 pass through the perforations and also through the wall of the box and secure the housing rigidly in the opening of the latter. Around the outer ends of each horizontal compartment the flange 4 is provided with a recess 7, and screw-holes 8 are provided in the walls of the recesses and at opposite sides of the latter. In the present instance the housing is provided with two compartments; but it is obvious that the particular number of compartments is immaterial and may be more or less than as shown in the drawings.

A hole 9 extends horizontally through the housing between the compartments and serves as a bearing for a shaft 10, which extends from the outer to the inner end of the housing. The outer end of this shaft is provided with a small hand-wheel 11 or similar device, by which the shaft may be conveniently rotated or revolved, and the inner end of said shaft, which projects beyond the inner end of the housing, carries a head 12 with a plurality of radiating arms 13. These arms are designed to be revolved on the interior of the box with the shaft and head, so as to loosen and break up the sand if for any reason the latter becomes hard or lumpy, as it frequently does.

It is to be understood that in the ordinary or normal condition of the device the housing is stationary and is bolted to the wall of the sand-box, and as long as the housing is thus secured the shaft and revoluble arms are also retained in place, but that all of these devices may be removed simultaneously by first withdrawing the bolts 6.

The devices employed to receive and distribute the sand will now be described. The number of sand-distributing devices is de-

terminated by the number of compartments or openings provided in the housing. If there are two compartments in the housing, there will be a similar number of distributing devices.

5 In the form of device shown in Figs. 1 to 6, inclusive, the sand-distributing devices each have the forms of a drawer-like block or case 14, which conforms in shape to the compartments of the housing, so as to snugly fit and
10 slide longitudinally therein. This case is provided at its outer end with a flange 15, having perforations 16 at opposite sides, which flange enters the recess 7 in the outer side of the housing-flange 4, and bolts 17 pass through
15 the perforations 16 and into the screw-holes 8 in the recess and retain the case in the housing. The length of the case 14 is such that its inner end will project inwardly beyond the housing, and this inner projecting
20 end is provided with a beveled upper surface 18. Sand-passages 19 extend longitudinally through the case 14, and the inner ends of said passages curve and open upwardly through the beveled surface 18, so that the
25 entrance to the passages will be accessible for the sand in the box to drop into from above. The outer end of each sand-passage is provided with a coupling 20, which is screw-threaded into the passage, so the threads will
30 not be exposed to the sand traveling there-through. A central air-passage 21 is also provided in the case 14 and extends in a direction parallel with and between the sand-passages 19. A tube 22 screws into the air-
35 passage 21 at the inner end of the case, and a T-coupling 23 is united to said tube, so as to direct the air from the central passage laterally and into nozzles 24, which enter the end wall of the case and open into the sand-
40 passages 19 beneath the entrances. An air-supply tube 25 is connected to the outer end of the central passage 21 and is in connection with a storage-tank or other source of supply under the control of the engineer. It is to be
45 understood that each drawer-like case 14 has two sand-passages, an air-passage, and nozzles to establish communication between the air-passage and both sand-passages and that as these features are all a part of the case the
50 removal of all of them may be accomplished by simply withdrawing the case from the housing-compartment. Tubes or pipes 26 are connected to the outer ends of the couplings 20 to direct the sand to the point of ap-
55 plication to the rails.

By reference to Figs. 1 and 3 it will be noted that the lower sand-distributing case 27 is longer than the case above it. This is desirable and advantageous, because the
60 openings to the sand-passages of said lower case will have position in a vertical plane beyond the mechanism of the upper case, and the latter will not act as an obstruction to prevent the sand from falling by gravity into
65 the openings of said lower case. With this

single exception—to wit, the difference in length—the two cases are exactly alike.

In the practical operation of the sander the passages of the lower case communicate with tubes or pipes that lead to the forward or
70 front drivers for the reason that they have the lowest position in the sand-box and in case the level of the sand falls below the upper case will still have the benefit of the sand.

It is to be understood that a separate air-
75 supply pipe is provided for each case, so that the sand may be blown from the upper or lower cases separately. While it is not essential to the operation of the sander that the cases be contained in a housing, it is desirable
80 to employ such housing for the reason that when one or both of the cases are withdrawn for inspection or repairs the sand in the box will not escape, and such inspection or repair may be made without first emptying the
85 sand-box.

If for any reason it should be necessary to remove the entire sander, the uncoupling of the tubes 26 and the removal of the bolts 6
90 will enable the immediate withdrawal of the entire sander mechanism.

By reference to Figs. 7 and 8 it will be seen that the invention is susceptible of ready modification. In these forms a plate
95 28 covers the opening in the sand-box and is provided with four independent sand-tubes 29, with an air-tube 30 entering and passing through the plate between each pair of tubes. In this form of device all the tubes may be
100 withdrawn for inspection or repair by uncoupling the pipes 31 and removing the bolts 32.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A pneumatic sander comprising a sand-
105 receptacle; a plurality of sand-distributing devices sustained in said receptacle in different horizontal planes and air-tubes in the receptacle and also arranged in different horizontal
110 planes.

2. A pneumatic sander comprising a sand-
115 receptacle, a plurality of sand-distributing devices arranged in pairs in different planes, and a separate air-supply for the sand devices in each plane.

3. A pneumatic sander comprising a sand-
120 receptacle; a plurality of sand-distributing devices arranged in pairs in different horizontal planes and having openings in their upper sides and the openings in one pair of sand
125 devices being in a different vertical plane from the openings of the next adjoining pair of devices, and an air-supply for each pair of sand devices.

4. A pneumatic sander comprising a sand-
130 receptacle; a plurality of sand-distributing devices arranged side by side, and an air-supply passage between each pair of sand devices and having branches which communicate with the latter.

5. A pneumatic sander comprising a sand-receptacle having a side opening, a pair of sand-distributing devices sustained by and passing through said plate to the interior of the receptacle, and an air-supply device also sustained by said plate and extending between the pair of distributing devices.

6. A pneumatic sander comprising a sand-receptacle; a plurality of sand-distributing devices sustained by and projecting into said receptacle and means beyond the inner ends of said sand devices for agitating the sand in said receptacle.

7. A pneumatic sander comprising a sand-receptacle; a plurality of sand-distributing devices in different horizontal planes and a device sustained so as to agitate the sand adjacent the ends of said distributing devices.

8. A pneumatic sander comprising a sand-receptacle; a plate at one side of said receptacle; a plurality of sand-distributing devices carried by said plate, and a revoluble device also sustained by the plate to agitate the sand adjacent the sand devices.

9. A pneumatic sander comprising a sand-receptacle; a device removably attached so as to project into the receptacle and having a plurality of sand-passages and also having an air-passage and branches leading from the air-passage to the sand-passages whereby said devices may be simultaneously removed from the receptacle.

10. A pneumatic sander comprising a sand-receptacle; a case entering the receptacle and having a central air-passage and a sand-passage at each side of the air-passage and the openings into the sand-passages being adjacent the inner end of the case, and air-tubes leading from the central air-passage into the sand-passages.

11. A pneumatic sander comprising a sand-receptacle; a plurality of cases of different lengths projecting into said receptacle in different horizontal planes and each case having two sand-passages, and an air-supply for each of said sand-passages.

12. A pneumatic sander comprising a sand-receptacle; a plurality of cases projecting into said receptacle and each case having two sand-passages; an air-supply for each of said

sand-passages; and means whereby the cases may be independently removable.

13. A pneumatic sander comprising a sand-receptacle; a housing; a plurality of sand-distributing devices projecting the housing and communicating with the receptacle; an air-supply for the sand devices; and means whereby the sand-distributing devices may be independently withdrawn from the housing.

14. A pneumatic sander comprising a sand-receptacle; a housing; a plurality of sand-distributing devices passing through the housing in different horizontal planes and the uppermost sand device being shorter than the one next below it, and an air-supply for each sand device.

15. A pneumatic sander comprising a sand-receptacle; a housing having a plurality of compartments; a sand-distributing device movable longitudinally in each compartment and an air-supply for each sand-distributor.

16. A pneumatic sander comprising a sand-receptacle; a housing having a plurality of compartments in different horizontal planes; a sand-distributor in each of said compartments; and an air-supply for each distributor.

17. A pneumatic sander comprising a sand-receptacle; a housing projecting into the receptacle and having a plurality of compartments; a case slidable through each of said compartments and each case having two sand-passages; and an air-supply for the passages in each case.

18. A pneumatic sander comprising a sand-receptacle having an opening at one side; a housing projecting into the receptacle through said opening and having a plurality of compartments, one above another; a case fitting each compartment so as to slide therein with its inner end projecting into the receptacle and said cases differing in length and having sand-passages; and an independent air-supply for the passages of each case.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN J. MORGAN.

Witnesses:

MICHAEL LUBER,
JOHN C. HOOPER.