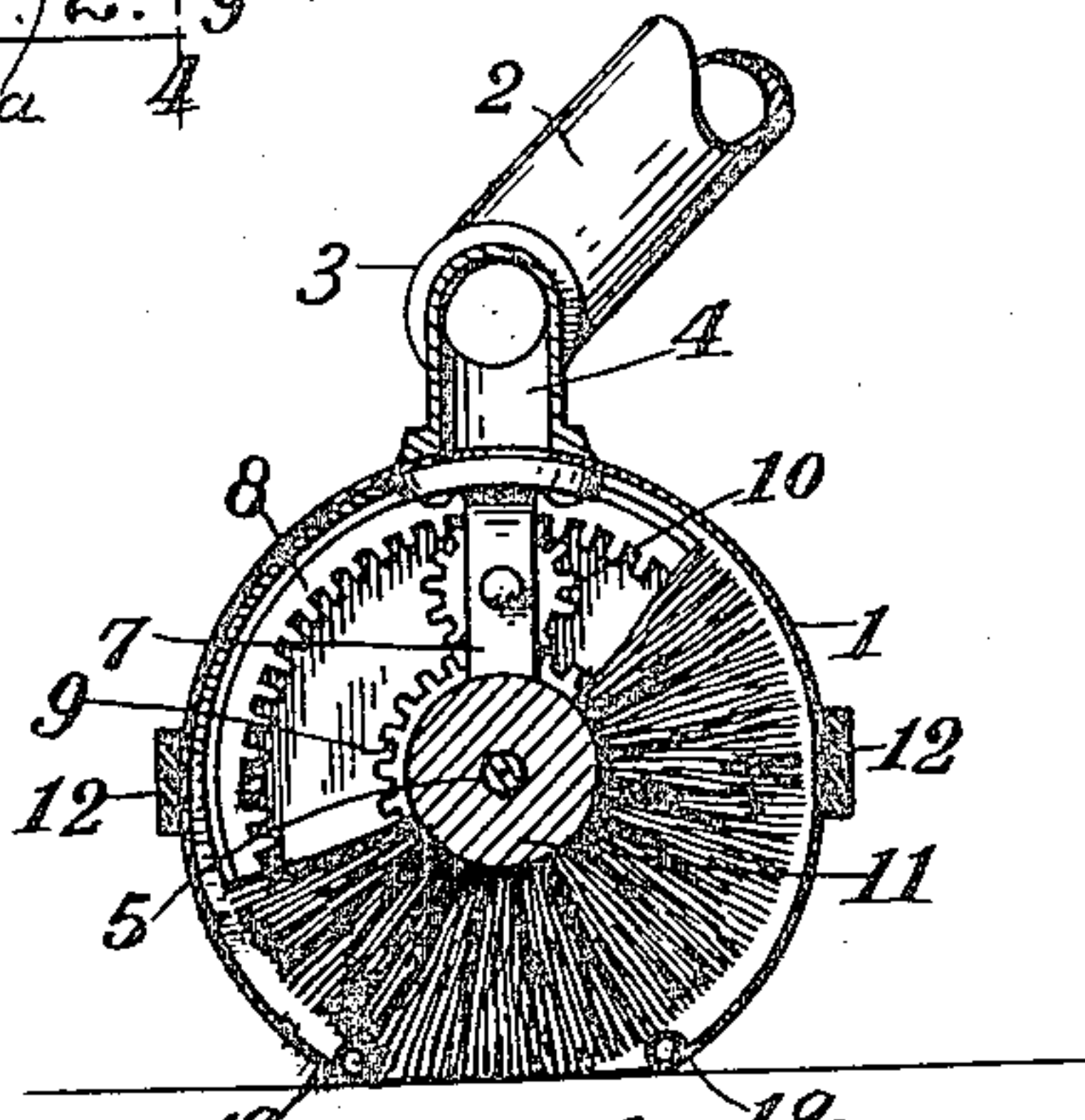
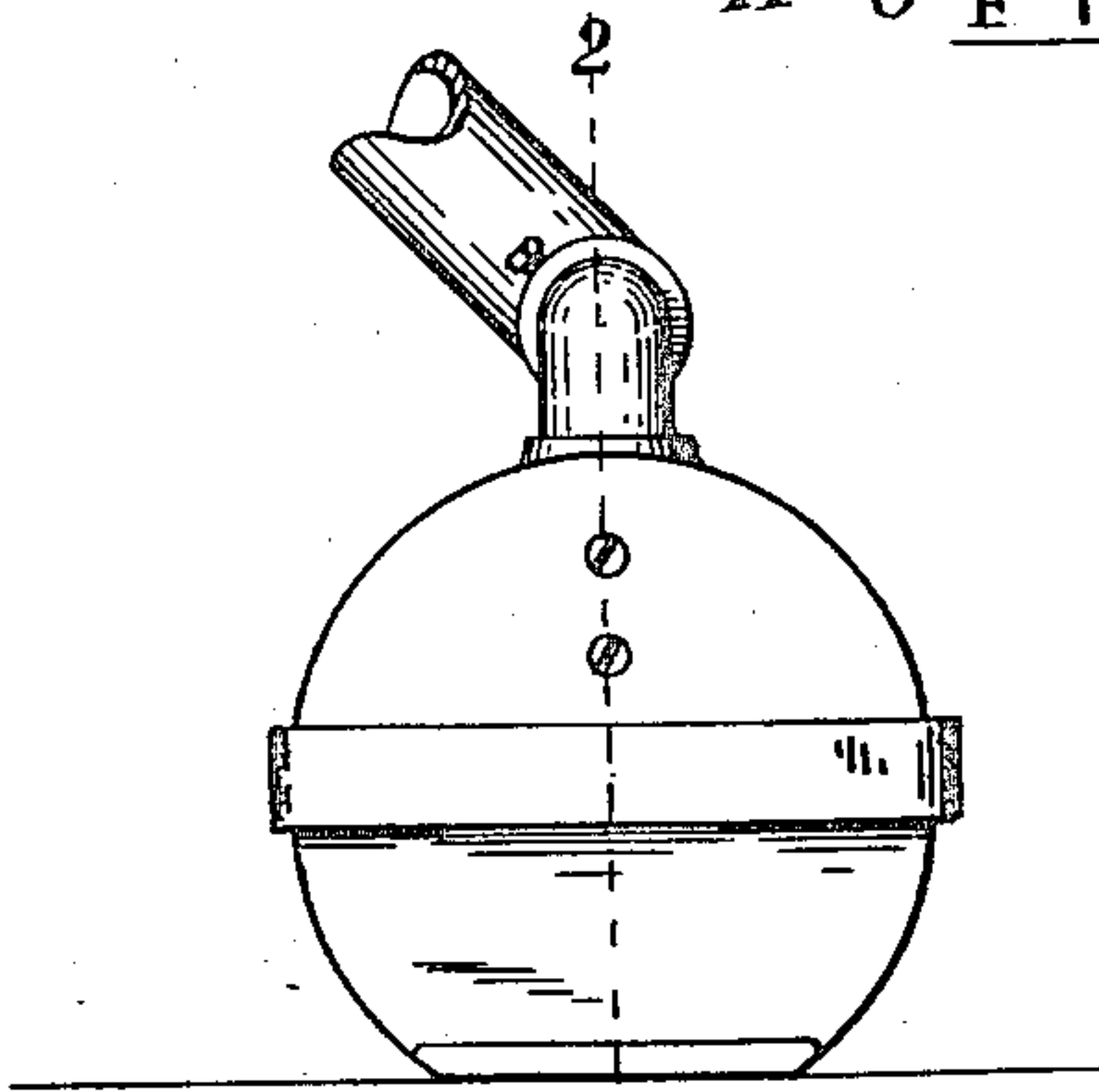
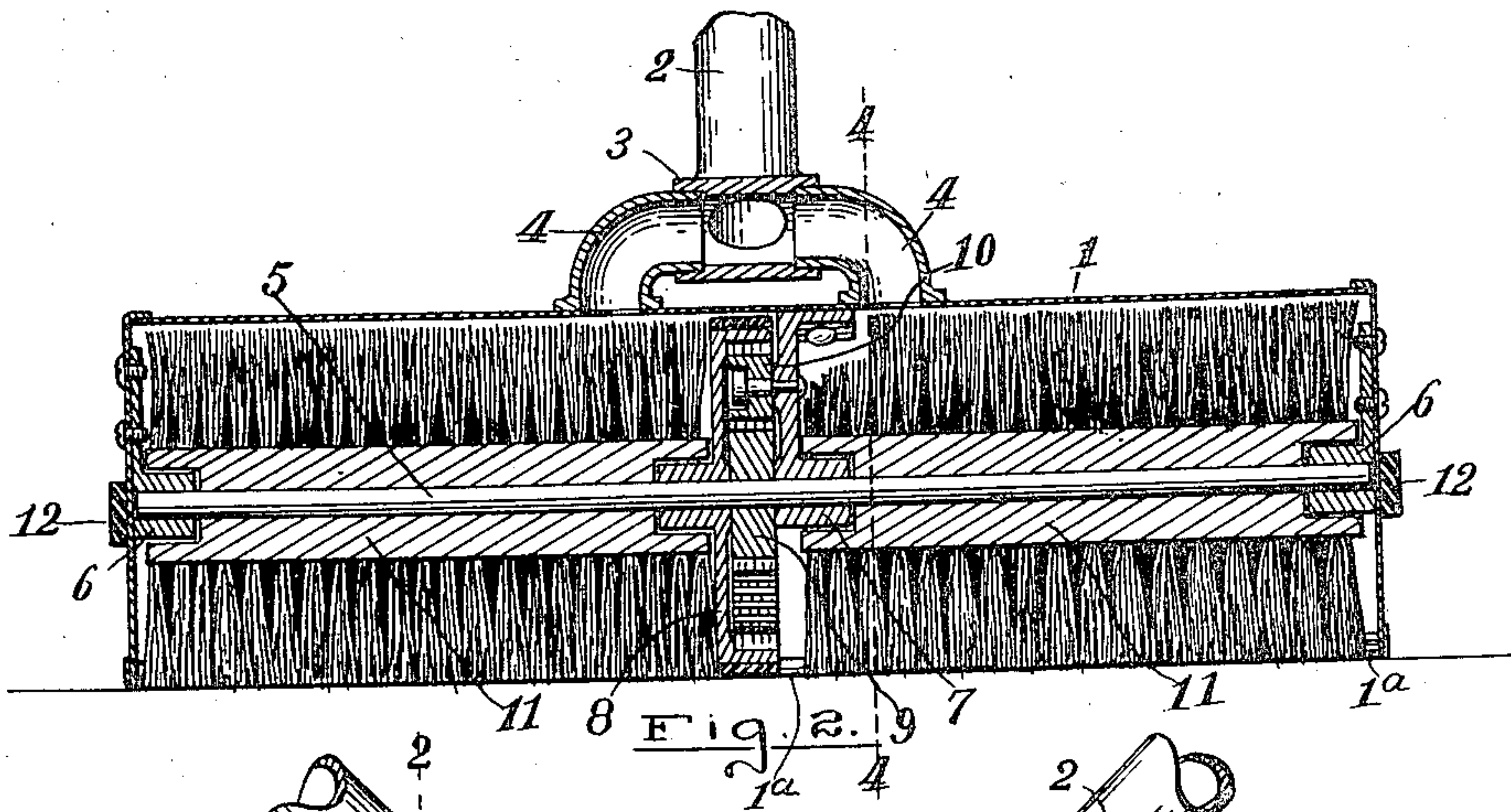
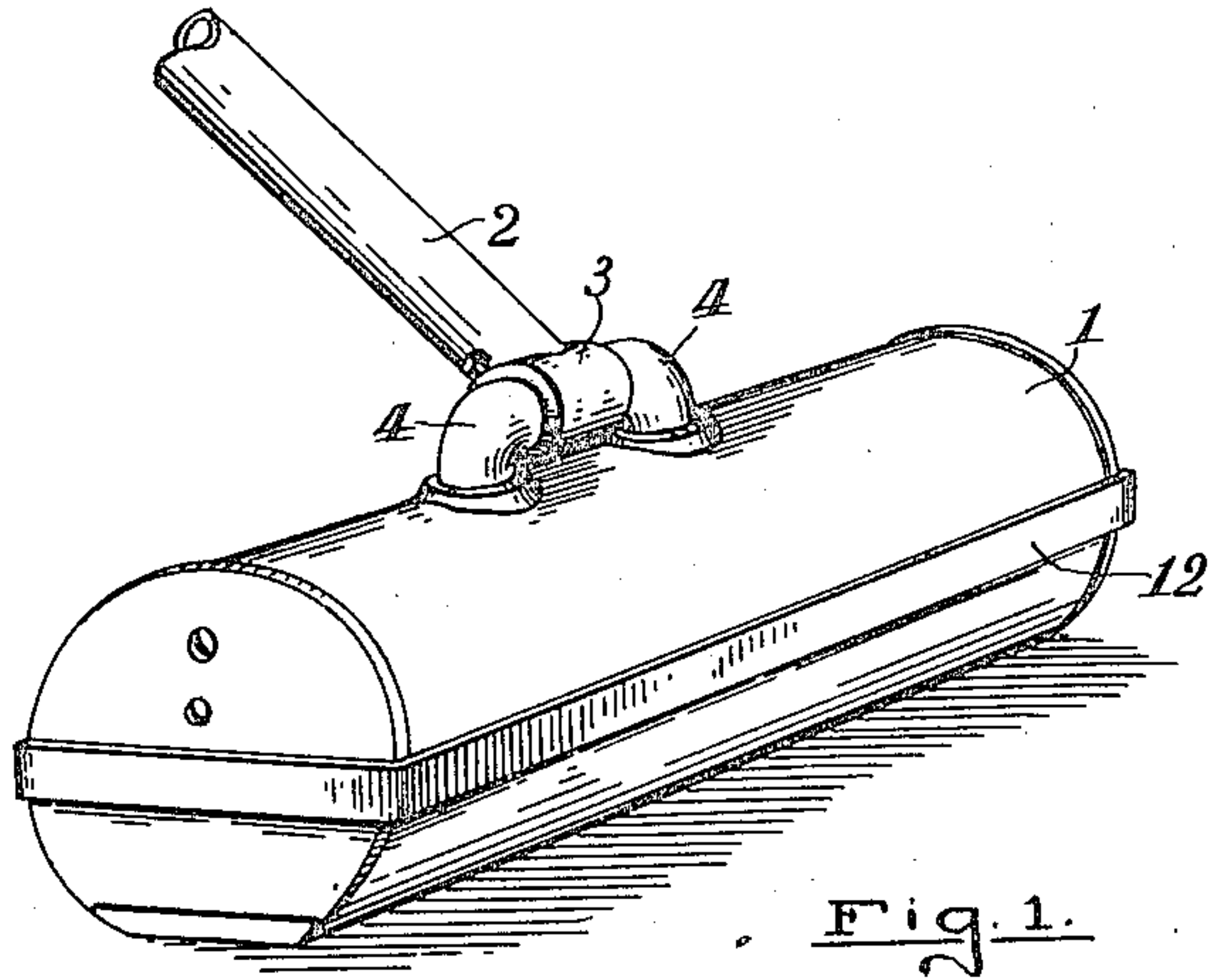


F. H. HIRTH.  
PNEUMATIC CLEANER.  
APPLICATION FILED DEC. 4, 1909.

Patented June 28, 1910.

962,569.



Inventor

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Witnesses

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Palmer A. Jones.



# UNITED STATES PATENT OFFICE.

FREDERICK H. HIRTH, OF GRAND RAPIDS, MICHIGAN.

## PNEUMATIC CLEANER.

962,569.

Specification of Letters Patent. Patented June 28, 1910.

Application filed December 4, 1909. Serial No. 531,396.

To all whom it may concern:

Be it known that I, FREDERICK H. HIRTH, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Pneumatic Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in pneumatic cleaners, and its object is to provide an effective device; to provide the same with means for beating the surface to be cleaned and separating the dust therefrom, and to provide the device with various new and useful features, hereinafter more fully described and particularly pointed out in the claims.

My device consists essentially of the improved means herein shown for supporting a centrally driven brush shaft and its driving mechanism and in various features of construction and arrangement, as will more fully appear by reference to the accompanying drawings, in which:

Figure 1 is a perspective of a device embodying my invention; Fig. 2 a longitudinal vertical section of the same on the line 2—2 of Fig. 3; Fig. 3 an end elevation of the device; and, Fig. 4 a transverse section on the line 4—4 of Fig. 2.

Like numbers refer to like parts in all of the figures.

1 represents a substantially cylindrical case preferably of sheet metal closed at the ends and having a longitudinal opening in the bottom. The edges of the case surrounding this opening are turned inward in tubular or cylindrical form to afford a smooth rounded surface to slide in contact with the material to be cleaned.

2 is a tubular handle adapted to be attached by means of a hose to any suitable device for exhausting air in the usual way (not shown). This handle 2 is provided with a T-head 3 at the lower end, rotatively adjustable on tubular elbows 4, each communicating with the interior of the case. Through these elbows and handle, the air is exhausted from the case, and carries the dust particles away in the usual manner.

To beat the material to be cleaned, and thus more effectually separate the dust therefrom, I provide the device with a ro-

tary brush mounted on a rotative rod 5, extending along the axis of the case, and journaled in end bearings 6 and a center bearing 7. These bearings are extended laterally and recessed into the respective ends of the brush to extend the brush close to the case and driving mechanism, and at the same time secure ample bearings for the shaft. This brush is divided and spaced apart near the middle of the device to provide room for the means for driving the brush, and the brush extends close to the ends of the case to adapt the device to work into corners or close to a wall.

Journalled on the rod 5 is a driving wheel 8 internally geared and having an external elastic surface, preferably of rubber, to engage the surface of the material to be cleaned and to be rotated thereby. On the middle hanger 7 is journaled an idler gear 10 engaged and driven by the internal gear of the driving wheel 8. This idler engages and drives a pinion 9 fixed on the shaft 5, whereby the shaft and brush are rotated as the device is moved over the surface to be cleaned. The action of the brush beats the material beneath the opening in the case and raises the dust therefrom more effectually than by air alone. The air then carries this dust away in the usual manner. It will be noted that the shaft is provided with substantial bearings at the ends and also at the middle where the driving gearing is located, and is thus prevented from springing out of line or binding in the bearings.

What I claim is:—

1. A pneumatic cleaner comprising a cylindrical case having a longitudinal bottom opening, a rotative shaft along the axis of the case, end hangers and a middle hanger in all of which the shaft is journaled, a brush fixed on the shaft, said brush being divided and spaced apart at the middle, an internally geared driving wheel journaled on the shaft and projecting through said opening, a pinion fixed on the shaft, an idler mounted on the middle hanger and connecting the driving wheel and pinion.

2. A pneumatic cleaner comprising a cylindrical case having a longitudinal bottom opening, a rotative shaft along the axis of the case, end hangers and a middle hanger each having a laterally projecting bearing in which hangers the shaft is journaled, a brush fixed on the shaft, said brush being divided and spaced apart at the middle and

extending close to the case at the ends, and  
also recessed at the ends and at the middle  
to receive the bearings and hub an inter-  
nally geared driving wheel journaled on  
5 the shaft near the middle hanger and hav-  
ing a hub projecting oppositely to the bear-  
ing of said hanger, a pinion fixed on the  
shaft, an idler mounted on the middle

hanger and connecting the driving wheel  
and pinion.

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

FREDERICK H. HIRTH.

Witnesses:

PALMER A. JONES,  
MINNIE JOHNSON.