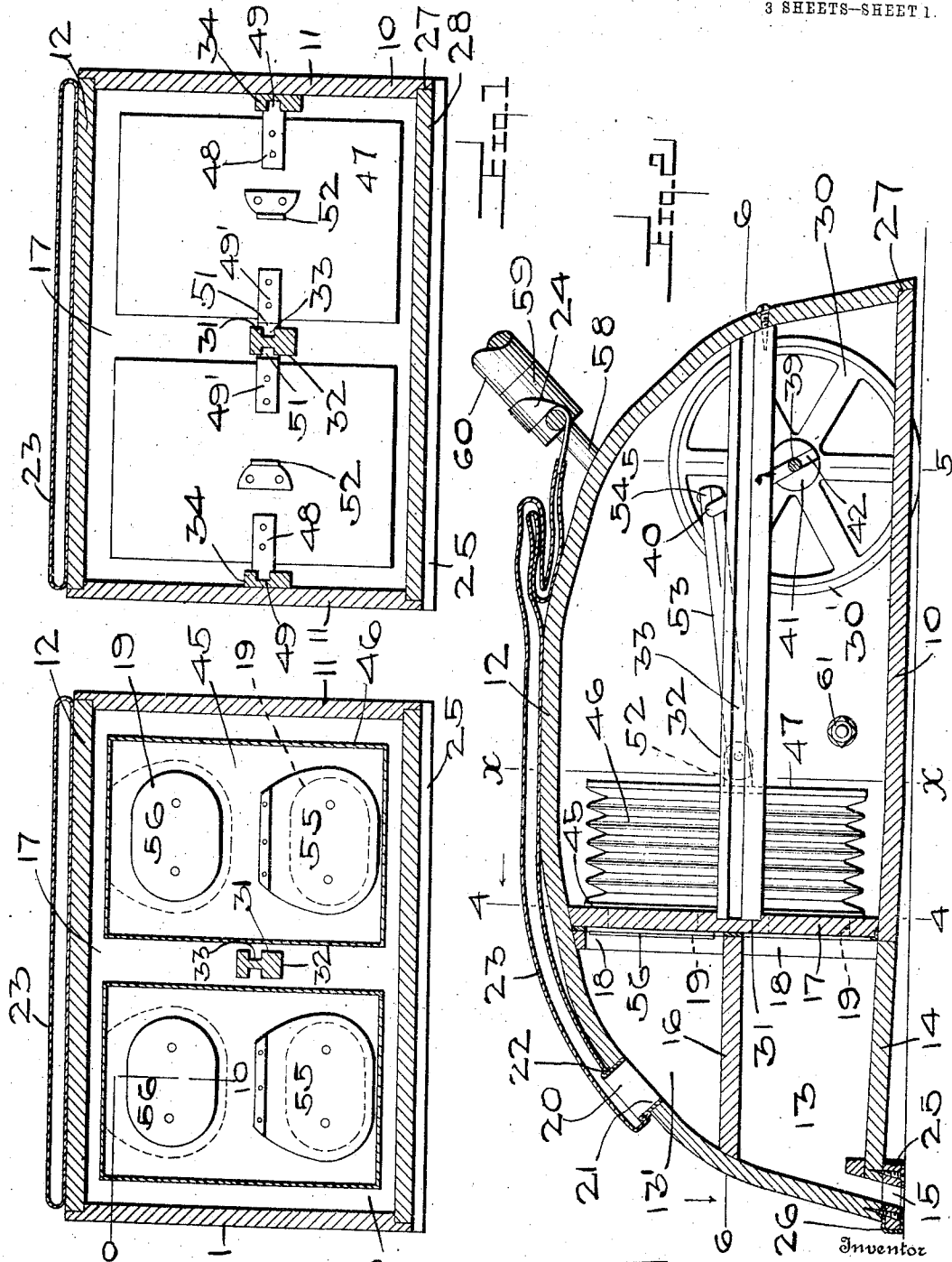


F. B. BUELL.
HAND OPERATED VACUUM CLEANER.
APPLICATION FILED SEPT. 28, 1909.

1,034,342.

Patented July 30, 1912.

3 SHEETS-SHEET 1.



Witnesses
Ed. R. Lusby
M. L. Low.

F. B. Buell

By Woodward & Chandler

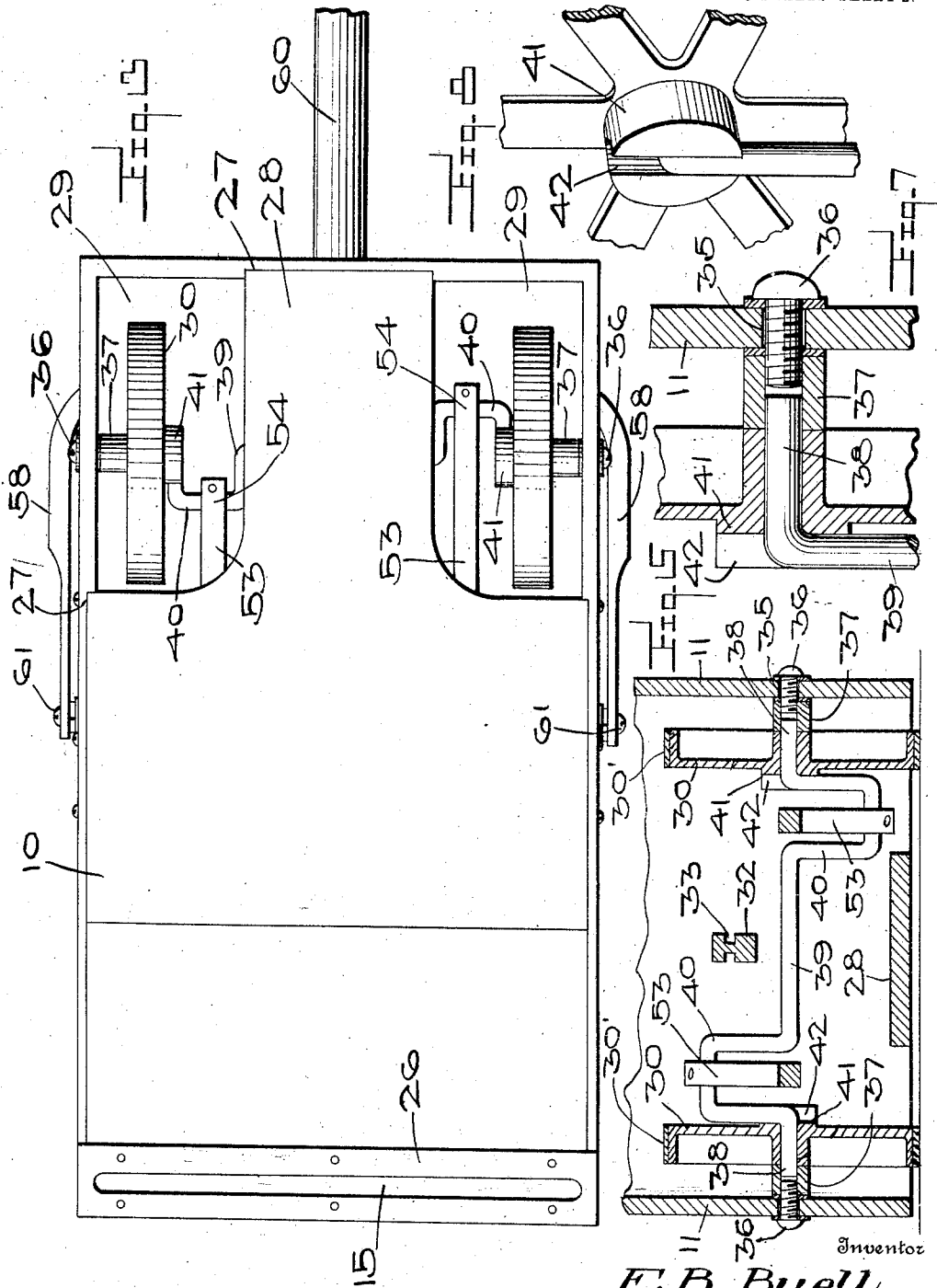
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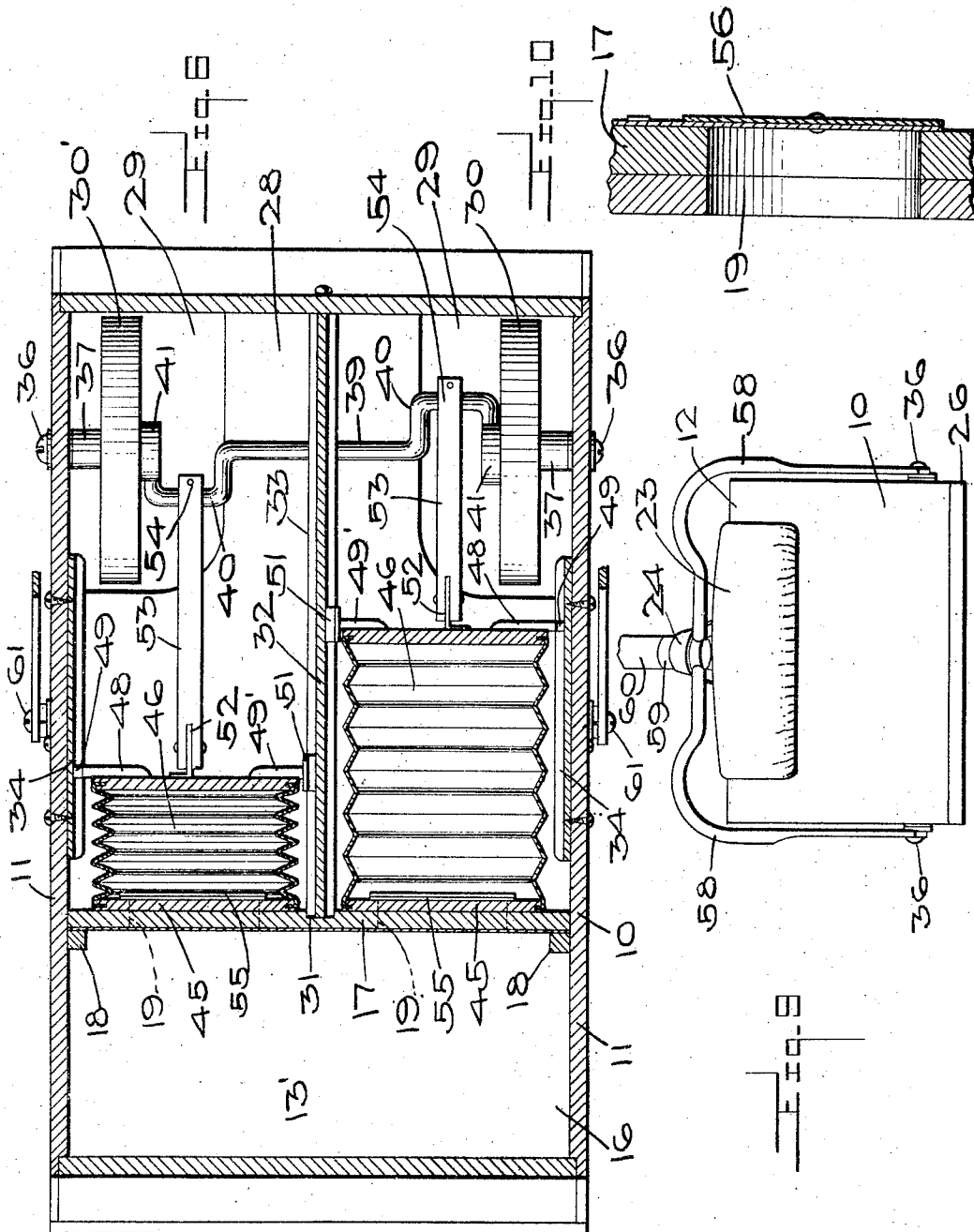
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

FRED B. BUELL, OF CANANDAIGUA, NEW YORK, ASSIGNOR TO JAMES M. McCABE, OF CANANDAIGUA, NEW YORK.

HAND-OPERATED VACUUM-CLEANER.

1,034,342.

Specification of Letters Patent.

Patented July 30, 1912.

Application filed September 28, 1909. Serial No. 519,980.

To all whom it may concern:

Be it known that I, FRED B. BUELL, a citizen of the United States, residing at Canandaigua, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Hand-Operated Vacuum-Cleaners, of which the following is a specification.

This invention relates to cleaning apparatus, and more particularly to a vacuum cleaner adapted to be operated by hand power.

A particular object is to provide a portable cleaner, comprising a wheeled casing adapted to be propelled across the floor by hand power, and carrying therein suitable mechanism for creating a vacuum and conducting accumulated dust and dirt to a detachable receptacle carried by the casing.

A particular object of the invention is to provide operative mechanism, the parts of which are so designed as to be susceptible of manufacture at an extremely low cost from stock material.

Another object is to provide a novel form of dust and dirt collector adapted to be readily detached from the machine, and replaced by a new one when desired.

Other objects and advantages will be apparent from the following description, and it will be understood that changes in the specific structure shown and described may be made within the scope of the claims, without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a transverse section on the line $x-x$ of Fig. 2. Fig. 2 is a longitudinal sectional view, Fig. 3 is a bottom view, Fig. 4 is a cross section on the line 4-4 of Fig. 2, Fig. 5 is a similar view on the line 5-5 of Fig. 2, Fig. 6 is a horizontal section on the line 6-6 of Fig. 2, Fig. 7 is a detail section of the journal connections for the drive wheels, Fig. 8 is a detail perspective of the connections between the wheels and the crank shaft, Fig. 9 is a front end view of the device showing the formation of the propeller yoke and the connections between the dust bag and the handle, Fig. 10 is a cross section on the line 10-10 of Fig. 4.

Referring to the drawings, there is shown

a cleaner comprising a wheeled casing 10 including side walls 11 approximately semi-circular in shape, and a curved top 12 thereover reaching to the lower edges of the sides at each end, as shown. An intake passage 13 is formed at the forward end of the casing by means of a rigid bottom or floor 14 stopping short of the top 12 and the sides 11, and a detachable partition 17 extending transversely of the casing and fitting snugly against the rear edges of the floors 14 and 16 and against suitable battens 18 carried by the sides 11. Spaced pairs of valve openings 19 are formed through the partition 17 and communicating respectively with the passage 13 and an outlet passage 13' formed above the floor 16. Formed through the top 12 adjacent the forward end of the passage 13', there is an outlet 20, in which, there is frictionally engaged a metal collar 21 having a laterally extending flange portion 22 to which there is secured the mouth of a dust collecting bag 23 having a strap 24 at its bottom end engaged slidably over the operating handle.

Secured to the bottom of the cylinder around the inlet 15, and outwardly thereof, there is a suction plate 25 comprising a block having an elongated slot therethrough extending approximately the full width of the casing and having a brass plate 26 thereover, the forward edge of which is turned upwardly over the plate 25 and secured between the plate and the bottom of the casing. This plate is suitably rounded and by extending the brass plate upwardly thereover and beneath the casing, any possibility of the edge of the plate becoming engaged with a carpet or other floor covering is obviated. This suction member engages frictionally with the carpet when the device is propelled, the wheels of the casing being disposed at the rear end thereof and carrying only a portion of its weight. It will be noted that as described, the rear portion of the casing is open from the bottom, and the bottom edges of the sides 11 and the rear end of the top portion 12 are provided with a rabbet 27 in which there is detachably set a floor portion 28 held by means of suitable screws engaged through the sides and top. The bottom 28 is provided with suitable longitudinally extending slots 29 receiving therethrough a portion of the wheels 30 for engagement with a floor as will be subse-

quently described. The lower edge of the partition 17 stops short of the lower surface of the floor portion 14 so that the removable bottom 28 may set snugly there-
 5 against. The partition 17 is inserted slidably in the casing below, and the engagement of the bottom thereover serves in part to hold it against disengagement.

Formed centrally of the partition there is
 10 a recess 31 receiving one end of a brace and guide member 32 the opposite end of which is secured against the extreme rear portion of the top 12, and bears against the partition to hold the partition snugly in position.
 15 It will be noted that the member 32 extends approximately horizontally, and is provided in its opposite sides with longitudinally extending grooves forming guideways 33. Attached to the inner faces of the side portions
 20 11, in parallel with the member 32, there are guide members 34, adapted to cooperate with the member 32 in supporting a reciprocating portion of a suction device subsequently to be described.

Formed in the sides 11, and spaced below
 25 the member 32, there are openings 35 receiving slidably therethrough screw members 36 carrying in threaded engagement on their inner ends suitable circular bearing blocks 37.
 30 Engaged revolvably in the blocks 37 there are trunnion portions 38 of a crank shaft 39, carrying the wheels 30, above mentioned. The shaft 39 is formed of a single bar of metal bent to present oppositely disposed
 35 cranks 40.

The wheels 30 are cast integrally and have hubs enlarged on their inner sides as shown at 41, and provided with a transverse groove 42 extending diametrically thereacross. The
 40 wheels are engaged slidably upon the trunnion portions 38, and against the adjacent crank 40, so that one arm of the crank will lie snugly in one side of the groove 42 to hold the wheel and crank shaft securely
 45 against relative rotation. The wheels are provided with rubber tires 30'.

Rectangular frames 45 having bellows 46 secured thereto are secured to the partition 17 at opposite ends, each frame circumscribing the vertically adjacent pairs of openings
 50 19 respectively. Secured to the opposite end of the bellows there is a head plate 47, carrying guide blocks 48 and 49', respectively. The block 48 is carried at the outer side of the head and is provided with a laterally projecting trunnion portion 49 engaged slidably in the adjacent outer guide member 34. The guide block 49' is located upon the inner
 55 side of the head 47 and its outer face, and is provided with a T-head 51 slidably engaged in the adjacent guide portion 33 of the brace member 32. Secured centrally of the outer face of the head 47, there is an L-shaped bracket 52 formed of sheet metal and en-
 60 gaged pivotally within the split end of a

connecting rod 53; the opposite end of which is provided with a split bearing 54 engaged with the adjacent crank portion 40 of the shaft 39. It will thus be seen that upon engagement of the wheels 30 with the floor
 70 and rotation thereof, the head 47 will be reciprocated to actuate the bellows 46.

Pendent stop valves 55 are secured over the lower openings 19, on their inner faces to allow inward passage of air and dust into
 75 the bellows therethrough, and similar valves 56 are secured over the outer faces of the upper pair of openings 19, to allow the outward movement of dust and air to the dust collecting bag 23 as above de-
 80 scribed. By this means, during the operation of the device, there will be a constant passage of air inwardly through the intake and outwardly through the outlet 20 to the bag 23, whereby the air will be strained
 85 from the dust and other particles by passing through the bag, leaving the dirt within the bag.

Centrally of the sides 11, there project outwardly headed bolts 61 pivotally en-
 90 gaged with which are the extremities of arms 58 of a yoke member having a central socket portion 59 disposed centrally over the casing and carrying a handle 60 therein. The arms 58 are formed of a single bar of
 95 metal, and are flattened at their extremities. In the manufacture of the device, its assemblage is greatly facilitated by the peculiar construction of the journals for the crank shaft, and the manner in which the
 100 partition 17 and brace member 32 coast. Its repair is likewise greatly facilitated, as the removal of any part may be accomplished with a minimum expenditure of time.

It will be seen that to remove the crank
 10 shaft it is only necessary to remove the screws 36 which allows the bearing blocks and the parts carried therein to be moved slidably out of the casing, after removal of
 11 the brace 32.

By forming the trunnions 49 on the outer guide blocks of the heads 47; and the T-head on the inner block, the removal of the brace guide from between the heads 47 is largely facilitated because of the pivotal
 1 movement possible between the heads and the side guides 34 when the central guide 32 is being removed. This allows the brace guide to be loosened at its rear end and slid out without injuring the blocks. The T-heads on the inner blocks serve to hold the bellows heads constantly in a vertical plane, when the parts are in operative position.

What is claimed is:

1. In a device of the class described, a housing having a downwardly extending intake portion provided with a slot there-
 through, a slotted contact member secured over said slot, said member comprising a supporting block and a friction plate se-

cured outwardly thereof and having its forward edge portion turned upwardly and disposed between the block and the casing, slots being formed through the block and plate in registry with the first named slot, and suction means arranged to draw air and particles of matter through the slots.

2. A machine of the class described comprising a casing, a bottom floor carried adjacent the forward end, a central floor carried thereover, an intake opening being formed through the bottom floor, an outlet opening being formed through the casing above the second named floor, a removable partition extending transversely of the cas-

ing and resting against said floors, a removable guide member engaged between the partition and the rear end of the casing, guide members carried by the casing in spaced relation with the first named guide member, reciprocating suction devices carried upon the guide members and connected with said intake and outlet openings, and means for operating the suction devices.

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

FRED B. BUELL.

Witnesses:

WALTER W. KNAPP,

GEORGE D. PECK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."