

May 9, 1933.

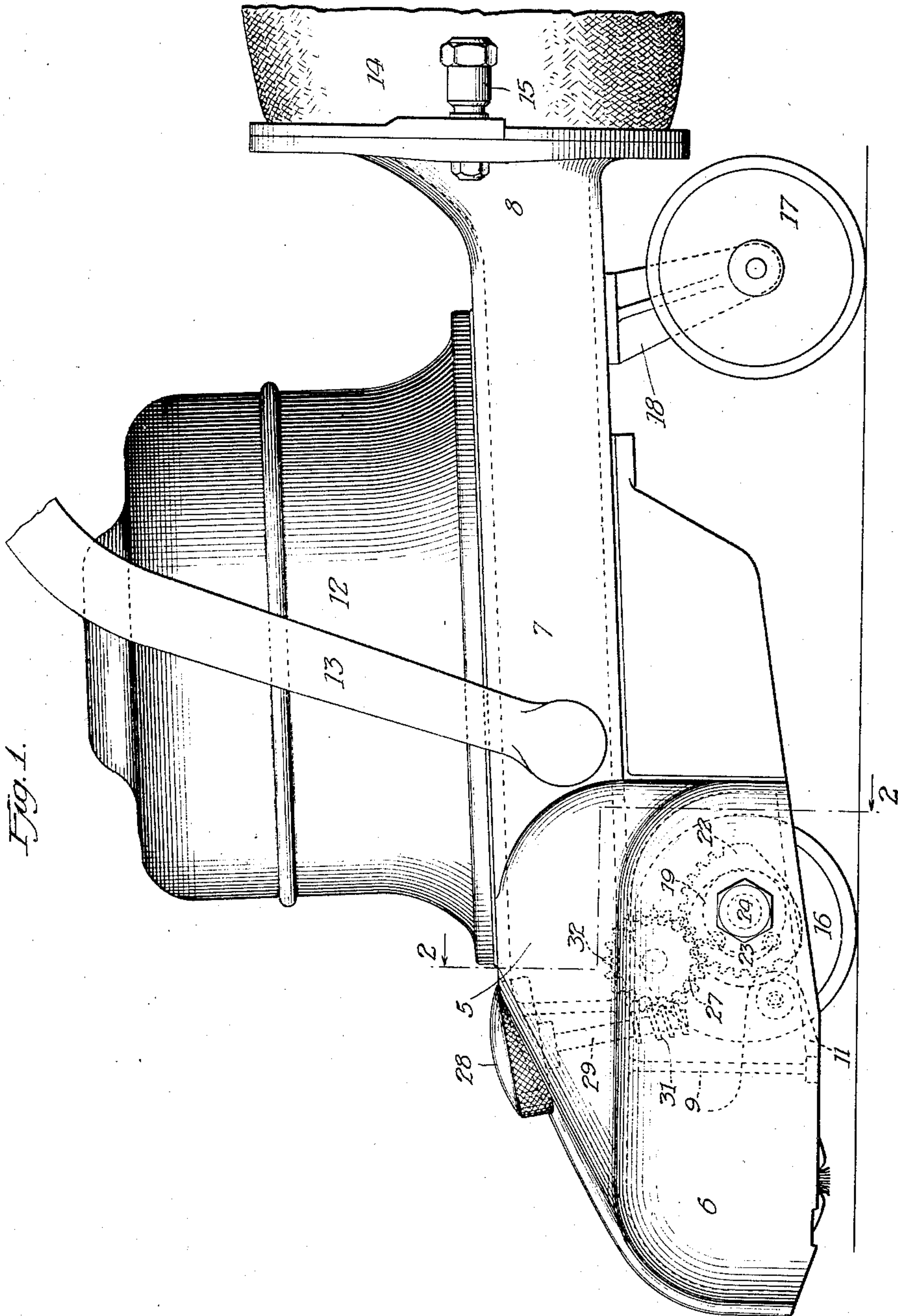
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1,907,886

SUCTION CLEANER

Filed March 7, 1930

2 Sheets-Sheet 1



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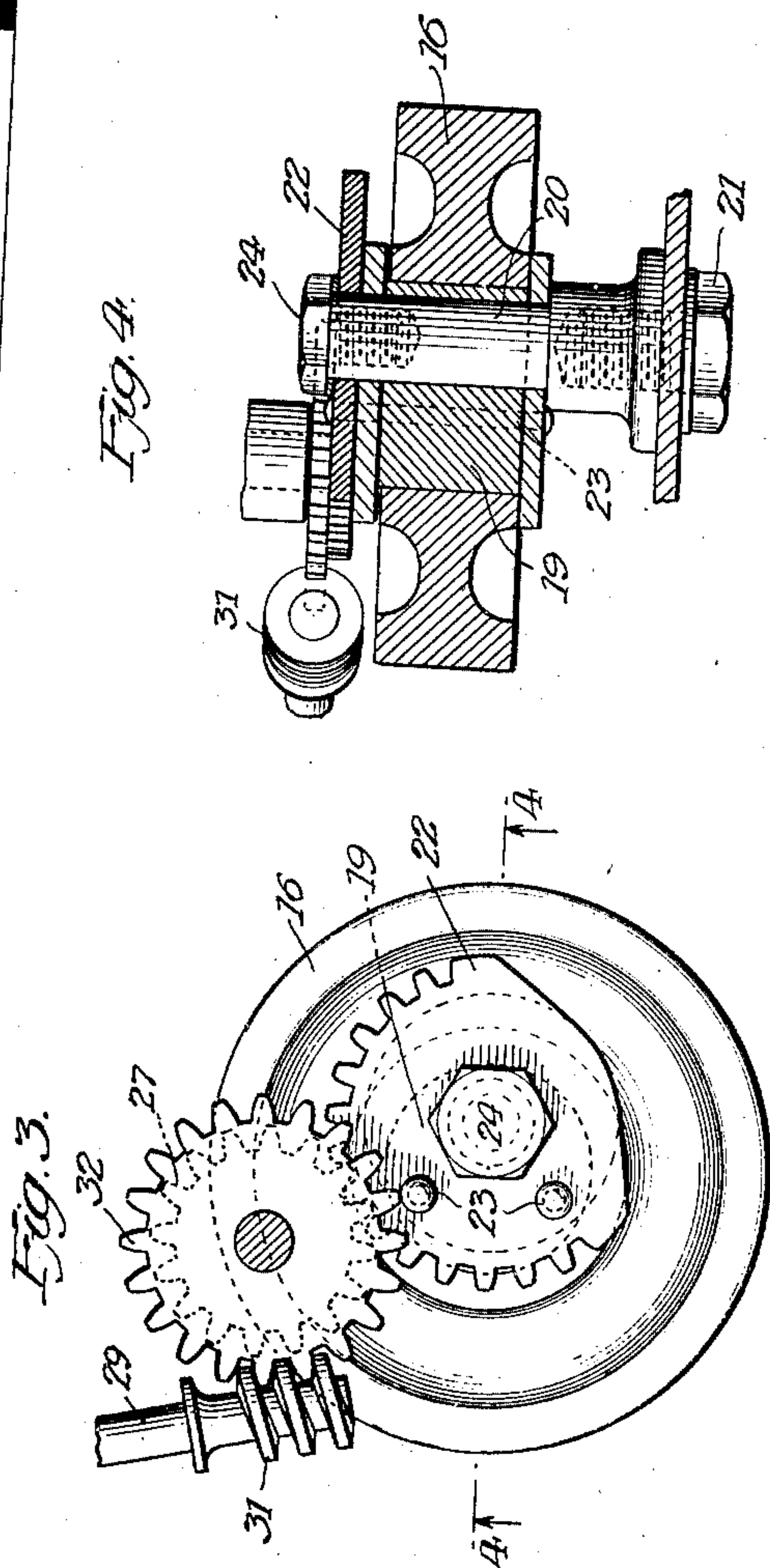
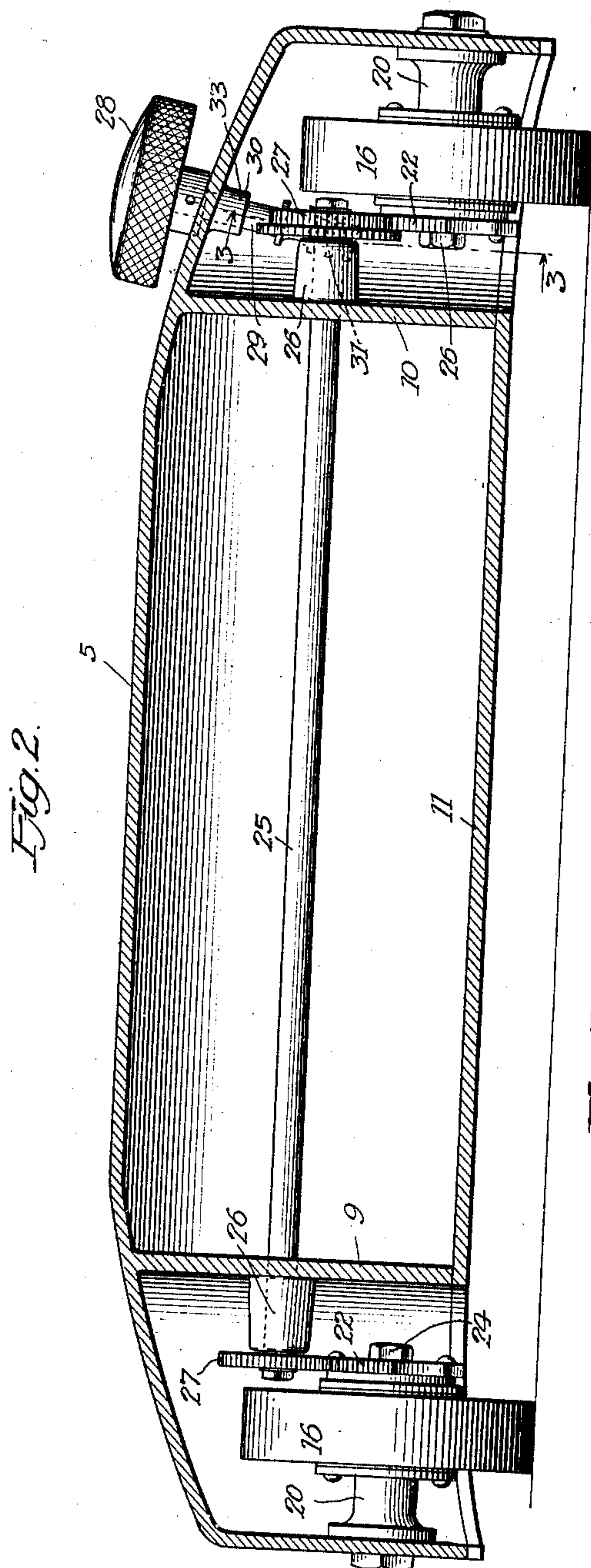
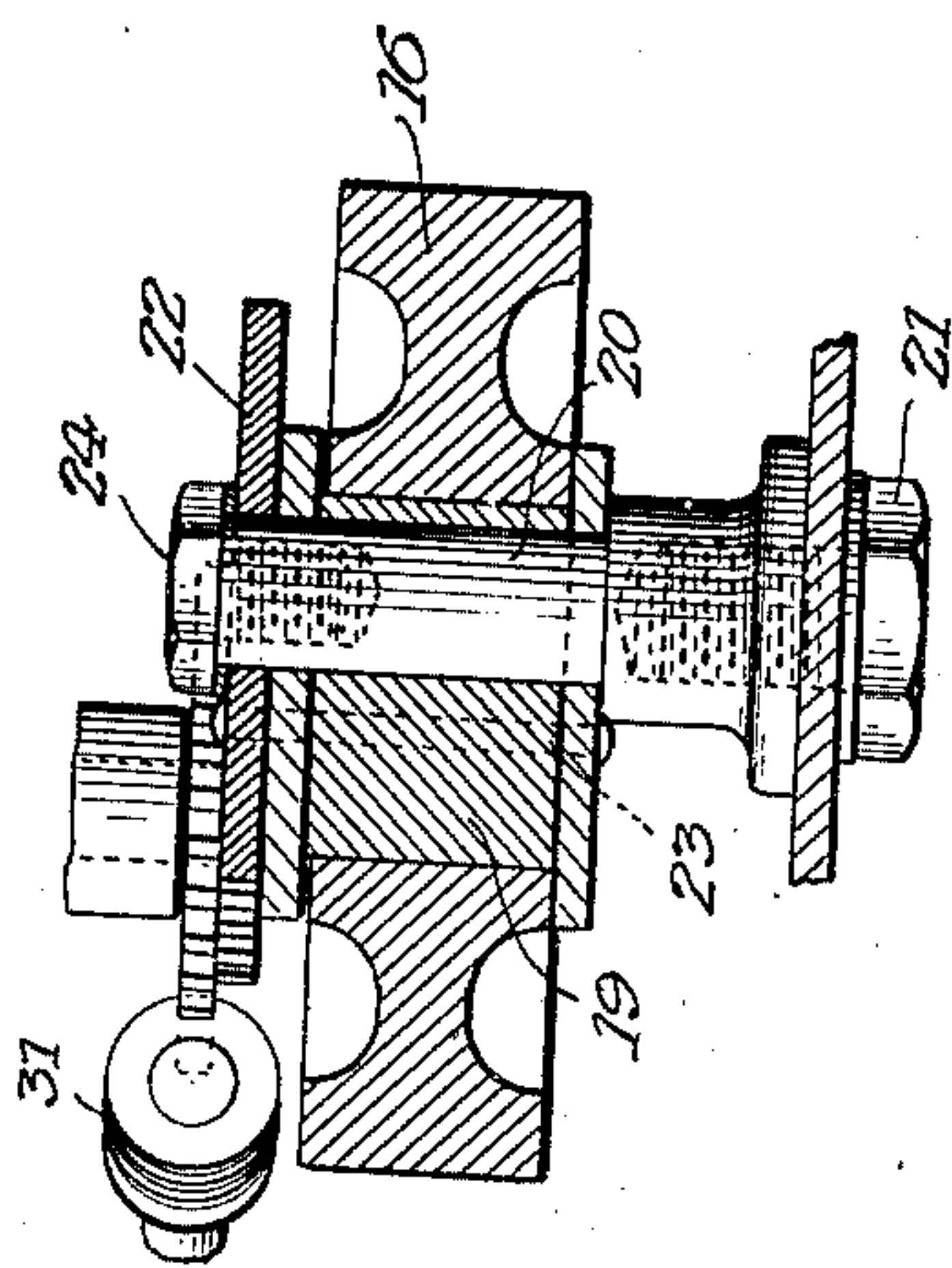


Fig. 4.



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# UNITED STATES PATENT OFFICE

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## SUCTION CLEANER

Application filed March 7, 1930. Serial No. 433,854.

The present invention relates to suction cleaners and more particularly to the means for adjusting the height of the nozzle of the suction cleaner relative to the surface covering undergoing cleaning. The invention comprises specifically an improved construction by which the front supporting wheels may be raised or lowered relative to the suction cleaner casing that the nozzle height may be varied.

It is an object of the present invention to provide, in a suction cleaner, a new and improved means for adjusting the nozzle height relative to the surface covering undergoing cleaning. It is a further object of the present invention to provide a simple, durable and easily operated construction by which the front supporting wheels of a suction cleaner may be raised and lowered relative to the cleaner to vary the nozzle height. Other and more specific objects will appear upon considering the specification which follows and the drawings annexed thereto.

Referring now to the drawings:

Figure 1 discloses a side view of a suction cleaner embodying height-adjusting means constructed in accordance with the present invention.

Fig. 2 is a cross section upon the lines 2—2 of Fig. 1;

Fig. 3 is a cross section upon the lines 3—3 of Fig. 2;

Fig. 4 is a cross section upon the lines 4—4 of Fig. 3.

In the drawings and in Fig. 1 in particular, an ordinary suction cleaner is disclosed which comprises the usual parts including a main casing 5, which forms the suction nozzle 6, the fan chamber 7 and the exhaust outlet 8. At the corners of the nozzle 6 wheel pockets are formed by curved walls 9 and 10, which also serve, in cooperation with bottom plate 11, to form an air-directive passage therebetween for the cleaning air moving from the nozzle mouth to the fan chamber 7. The wheel pockets formed by the walls 9 and 10 and by the casing 5 are entirely outside of the air passage, as is clearly shown in Fig. 2.

A motor casing, which is indicated generally by the reference character 12, is mounted on

the main casing 5 and houses the driving motor for the suction-creating fan within the fan chamber 7, the motor and fan not being shown. A handle bail 13 is pivoted at its lower extremity to the casing 5 and provides means by which the cleaner may be propelled over the surface covering undergoing cleaning. A dust separator, indicated by the reference character 14, is secured to the exhaust outlet 8 by any suitable means such as 15 and 60 functions, in the operation of the machine, to separate the suspended foreign matter from the air which passes through the cleaner.

The supporting means for the cleaner comprise, at the nozzle end, spaced wheels which are located one within each of the wheel pockets formed at the sides of the nozzle 6. These wheels are indicated by the reference characters 16, 16 and are adjustable relative to the cleaner as will be hereinafter described and in a manner which forms the subject matter of the present invention. The rear supporting wheels, of which only one is shown and which is indicated by the reference character 17, are rigidly mounted relative to the cleaner proper by means of a suitable bracket 18 and serve, when the cleaner is adjusted relative to the surface covering undergoing cleaning, as the axis about which the cleaner pivots.

Referring now to Figures 2, 3 and 4 in particular, each front supporting wheel 16 is shown rotatably mounted on a bearing 19 which is itself eccentrically mounted upon a shaft 20 which in turn is rigidly secured to the side wall of the suction nozzle 6 by means of its threaded engagement with the protruding end of bolt member 21. At the inner end of bearing 19 is a gear 22 which is fixedly carried by bearing 19 by means of the longitudinally extending bolts 23, 23. Gear 22, which is concentrically mounted relative to the shaft 20, forms, with the wheel 16 and the bearing 19, a unitary construction which is secured relative to the supporting shaft 20 by means of a bolt member 24 which is threaded in the end thereof.

Between the two wheel pockets of the nozzle 6 extends a shaft 25 which is rotatably mounted in bearings 26, 26 formed in the



walls 9 and 10. At the extremities of the shaft 25 are gears 27, 27 which are adapted to mesh with the segmental gears 22, 22 and serve, upon the rotation of shaft 25, to cause rotation of gears 22, 22 and a resulting rotation of the eccentrically mounted bearings 19, 19 about their supporting shafts 20, 20 thereby raising or lowering the wheels 16, 16 relative to the nozzle. In order that the shaft 25 may be readily rotated by the operator a rotatable knob 28 is provided which is carried by a shaft 29 which extends upwardly through the nozzle wall from one of the wheel pockets and is rotatably mounted in a suitable bearing 30 formed in said nozzle. At the lower end of shaft 29 a worm gear 31 meshes with a gear 32 which is fixedly carried by the shaft 25 adjacent the gear 27 at that end of the shaft. Gear 32 is of greater diameter than gear 27 and the point of contact between it and a worm gear 31 is outside the circumference of gear 27.

To adjust the nozzle height of the cleaner which embodies height-adjusting means constructed in accordance with the present invention, it is only necessary for the operator to turn the adjustment knob 28. Knob 28 upon rotation rotates the shaft 29 and the gear 31 which are rigidly connected. As gear 31 rotates it causes the gear 32 upon the shaft 25 to rotate thereby rotating the gears 27, 27 at the respective ends of shaft 25. Upon the rotation of the gears 27, 27 the gears 22, 22 which are fixedly connected to the eccentrically mounted bearings 19, 19 are also rotated causing said bearings to change their position relative to the supporting shaft 20 and accordingly varying the position of the supporting wheels 16, 16 relative to said shaft and of course to the nozzle proper. Because of the mechanical advantage secured through the use of the gears no locking means are required to retain the nozzle adjustment once it has been set and unlimited force can be applied to the wheels 16, 16 without change in their position. The wheels 16, 16 are, of course, uniformly positioned within their respective wheel pockets and angular variations in their adjustment is made impossible by the rigid means through which they are connected and by which they are adjusted.

I claim:—

1. In a suction cleaner, a casing, spaced supporting wheels for said casing, an axle for each wheel carried by said casing, an eccentric bearing member for each wheel rotatably mounted on an axle, and means to rotate said bearing members relative to said axles comprising a gear carried by each member, cooperating gears rotatably mounted on said casing and operatively connected with said first mentioned gears and means to synchronously rotate said second mentioned gears.
2. In a suction cleaner, a casing, an axle carried by said casing, a supporting wheel for

said casing, a rotatable bearing member eccentrically supporting said wheel on said axle, a gear secured to said bearing member, a second gear, a rotatable shaft supporting said second gear in operative relation relative to said first gear, and manually rotatable means carried by said casing and operatively connected to said first mentioned shaft.

3. In a suction cleaner, a casing, an axle fixedly mounted therein, a bearing rotatably and eccentrically mounted on said axle, a supporting wheel rotatably mounted on the said bearing, a gear secured to said bearing, a second gear, a rotatable shaft supporting said second gear in operative relation relative to said first gear and means to rotate said shaft comprising a manually rotatable shaft carried by said casing, a gear on said shaft and a cooperating gear on said first mentioned shaft.

Signed at North Canton, in the county of Stark, and State of Ohio, this 28th day of February, A. D. 1930.

DONALD G. SMELLIE.