Aug. 22, 1950 K. J. SAYRE 2,519,936

PORTABLE POWER TOOL

Filed June 20, 1946 2 Sheets-Sheet 1

Fig. 5.

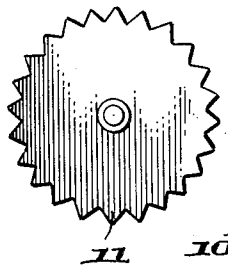


Fig. 1.

Fig. 4.

Inventor

Kenneth J. Sayre

By Watson, Cole, Grindle & Watson

Attorneys

Aug. 22, 1950 K. J. SAYRE 2,519,936

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Filed June 20, 1946 2 Sheets-Sheet 2

Fig. 2.

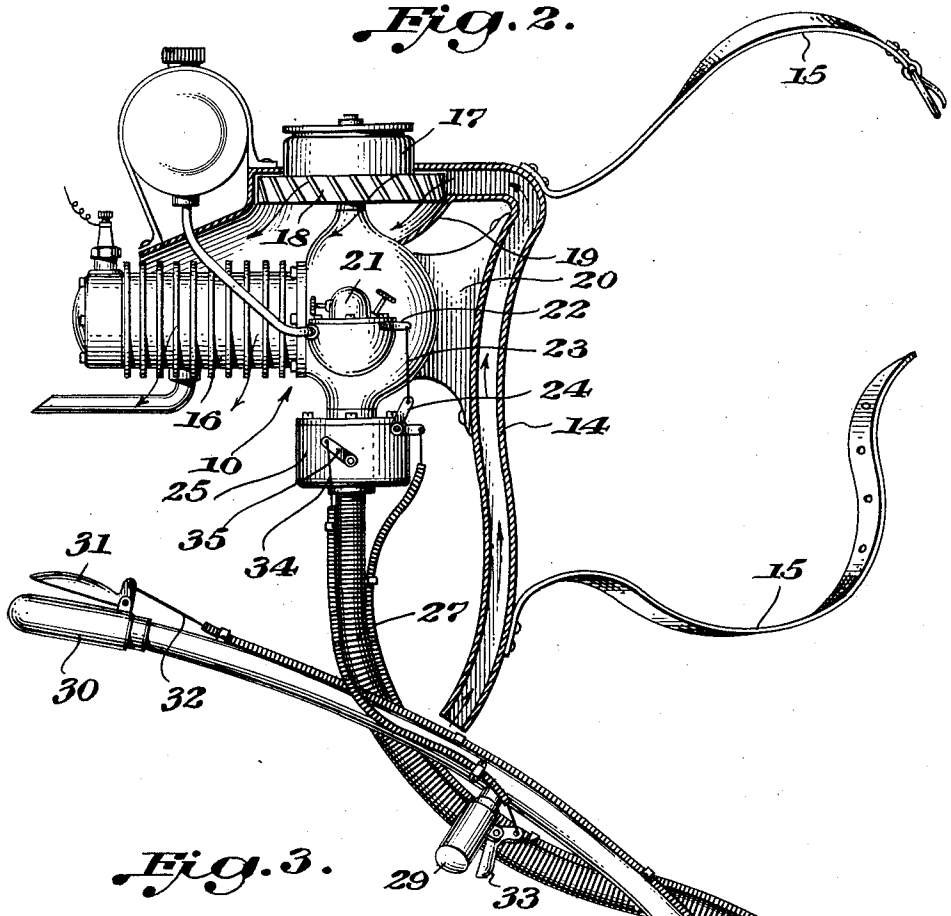
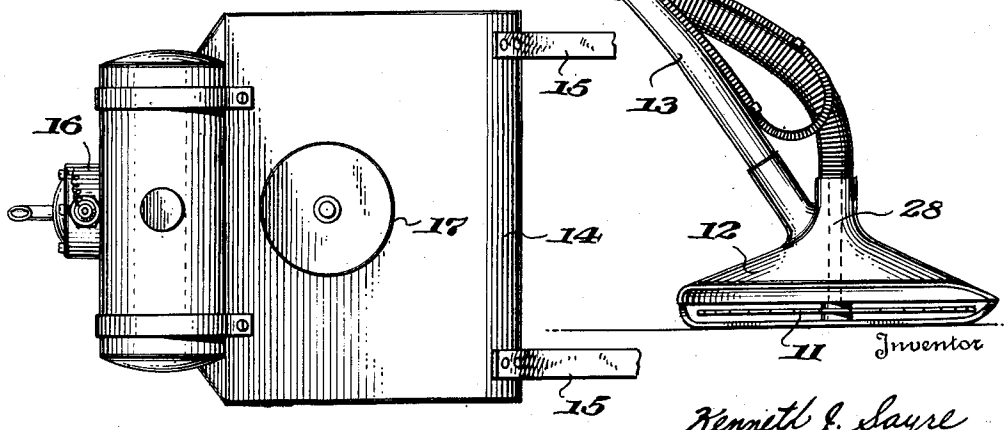


Fig. 3.



Inventor

Kenneth J. Sayre

By Watson, Cole, Grindle & Watson

Attorneys

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PORTABLE POWER TOOL

Kenneth J. Sayre, Edgerton, Wis.

Application June 20, 1946, Serial No. 678,132

4 Claims. (Cl. 224—5)

1

This invention relates to portable power tools, and more particularly to a portable tool in combination with an internal combustion engine adapted to be supported upon the back of the user. Preferably, the internal combustion engine will be of the air-cooled, two-stroke cycle type, quite similar to the small outboard marine engines now in common use.

It is a principal object of the present invention to provide a portable tool of the type described, comprising a supporting structure adapted to be worn upon the back of the user, an internal combustion engine supported upon said structure, and a tool connected to said engine through a flexible drive shaft, the supporting structure comprising an air intake passage through which cooling air for the engine is drawn, thereby insulating the back of the user from the heat of the engine.

A further object is the provision of a portable tool of the type described including a handle structure for supporting the tool in use, said handle structure including hand grips and engine control means connected to the engine by flexible means such as Bowden wires or the like.

A further object is the provision of a portable tool of the type described in which the flexible drive shaft is connected to the engine through an adjustable slip clutch, whereby damage to the tool and/or the engine is prevented in the case of the tool encountering an obstacle or being overloaded.

A further object is the provision of a portable tool of the type described in which the direction of airflow through the supporting structure may be reversed, whereby the supporting structure may be warmed with the heat of the engine during cold weather.

Other and further objects, features and advantages will be apparent from the description which follows, read in connection with the accompanying drawings in which

Figure 1 is an elevational view of a tool constructed in accordance with the invention, with the power source attached to the back of the user;

Figure 2 illustrates the tool of Figure 1 in side elevation, with the cooling air passages of the internal combustion engine shown partly in vertical section;

Figure 3 is a top plan view of the power source illustrated in Figures 1 and 2;

Figure 4 is a bottom plan view of one type of tool adapted to be operated in accordance with the invention, together with its housing; and

Figure 5 is a plan view of the cutting tool of Figure 4.

2

In order to facilitate an understanding of the invention, reference is made to the embodiments thereof shown in the accompanying drawings, and detailed descriptive language is employed. It will nevertheless be understood that no limitation of the invention is thereby intended and that various changes and alterations are contemplated such as would ordinarily occur to one skilled in the art to which the invention relates.

Referring to Figures 1 and 2, the present invention comprises an internal combustion engine designated generally by the reference character 10 connected by means of a flexible drive shaft with a tool 11 supported within a housing 12, which housing is attached to a handle 13 adapted to be supported by the hands of the user. The engine 10 is supported on the back of the user through the medium of a supporting structure 14 which may suitably be secured upon the back of the user by means of straps 15. The supporting structure 14 is made hollow and comprises the air intake passage for the cooling air supply to the engine 10.

The engine 10 is preferably of the two-stroke cycle type and is quite similar to small outboard marine motors now in common use. Its single cylinder 16 is provided with cooling fins in the usual manner, and the flywheel 17 is provided with peripheral vanes 18. A hollow structure 19 connects the flywheel 17 with the space surrounding the upper portion of the cylinder 16 and serves as a passage for the cooling air which is forced downwardly by the vanes 18 as the flywheel rotates.

Air is supplied to the vanes 18 through the supporting structure 14 which may be of aluminum or other light metal, or of other suitable material. The structure 14 is relatively wide and shallow, and is preferably shaped approximately to the conformation of the back of a person, so that it may be comfortably worn by the user of the tool. The engine 10 is supported upon the structure 14 through the medium of a bracket or arm 20 which may be riveted or otherwise secured to the structure 14. In the illustrated embodiment, the rotation of the flywheel 17 will cause cooling air to be drawn upwardly through the structure 14 and forced downwardly past the cylinder 16, the passage of the cooling air through the structure 14 serving to insulate the back of the user from the heat generated by the engine. In cold weather, a substitute fan portion having reversely inclined vanes may be applied to the flywheel 17, whereby heated air will be forced downwardly through the structure 14.

The engine is provided with a carburetor 21 including a fuel valve operated through the medium of an arm 22 which is connected by means of a link 23 to a bell crank lever 24. The latter is disposed exteriorly of the clutch and governor housing 25 and is secured upon a shaft 26 which extends into the housing 25. A flyball governor (not shown) of any suitable type is enclosed within the housing 25, and serves to control the fuel valve through the medium of the shaft 26, lever 24, link 23, and arm 22. The fuel valve may also be manually controlled through means to be described. The housing 25 also contains an adjustable spring pressed clutch (not shown) connecting the crankshaft of the engine with a heavy duty flexible shaft contained within the flexible housing 27. The lower end 28 of the flexible drive shaft is secured to the cutting tool 11 as seen in Figure 2.

The handle 13 upon which the tool housing 12 is supported is generally similar to a scythe handle and is provided with two spaced hand grips 29 and 39 for manipulation of the tool. A fuel control lever 31 is associated with the hand grip 30 and is connected by means of a Bowden wire 32 with the bell crank lever 24, thus providing manual control means for the fuel valve. A clutch control lever 33 is associated with the hand grip 29 and is connected by means of a Bowden wire 34 with a lever 35 secured upon a shaft 36 which extends into the housing 25 and operates the clutch.

The tool illustrated in the present embodiment comprises a serrated disc adapted for cutting weeds, and the housing or guard 12 is provided with V-shaped notches or serrations as seen in Figure 4, to admit the weed stems to contact with the teeth of the cutter. Obviously, other tools may be substituted for the cutter 11, as for example a saw blade, a wire brush, or the like, in which case modification of the housing 12 would be required, depending upon the type of work to be performed. Modification of the shape of the handle 13 would also depend upon the type of tool to be driven and the nature of the work to be performed.

Having thus described the invention, what is

claimed as new and desired to be secured by Letters Patent is:

1. In a portable tool including an internal combustion engine, a supporting structure comprising a hollow member open at two points one of which is adjacent the combustion area of said engine and the other of which is removed therefrom, means supporting said engine on said structure, and means for passing air through said structure.

2. In a portable tool including an internal combustion engine, a supporting structure comprising a hollow member open at two points one of which is adjacent the combustion area of said engine and the other of which is removed therefrom, means supporting said engine on said structure, and means operated by said engine for passing air through said structure.

3. A device according to claim 1, said supporting structure consisting in a relatively wide and shallow conduit shaped approximately to fit the back of a person.

4. For an air-cooled internal combustion engine, a supporting structure comprising a relatively wide and shallow conduit, said conduit being curved approximately to fit the back of a person and having an orifice adjacent the combustion area of said engine, and means for supporting said engine on said structure.

KENNETH J. SAYRE.

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