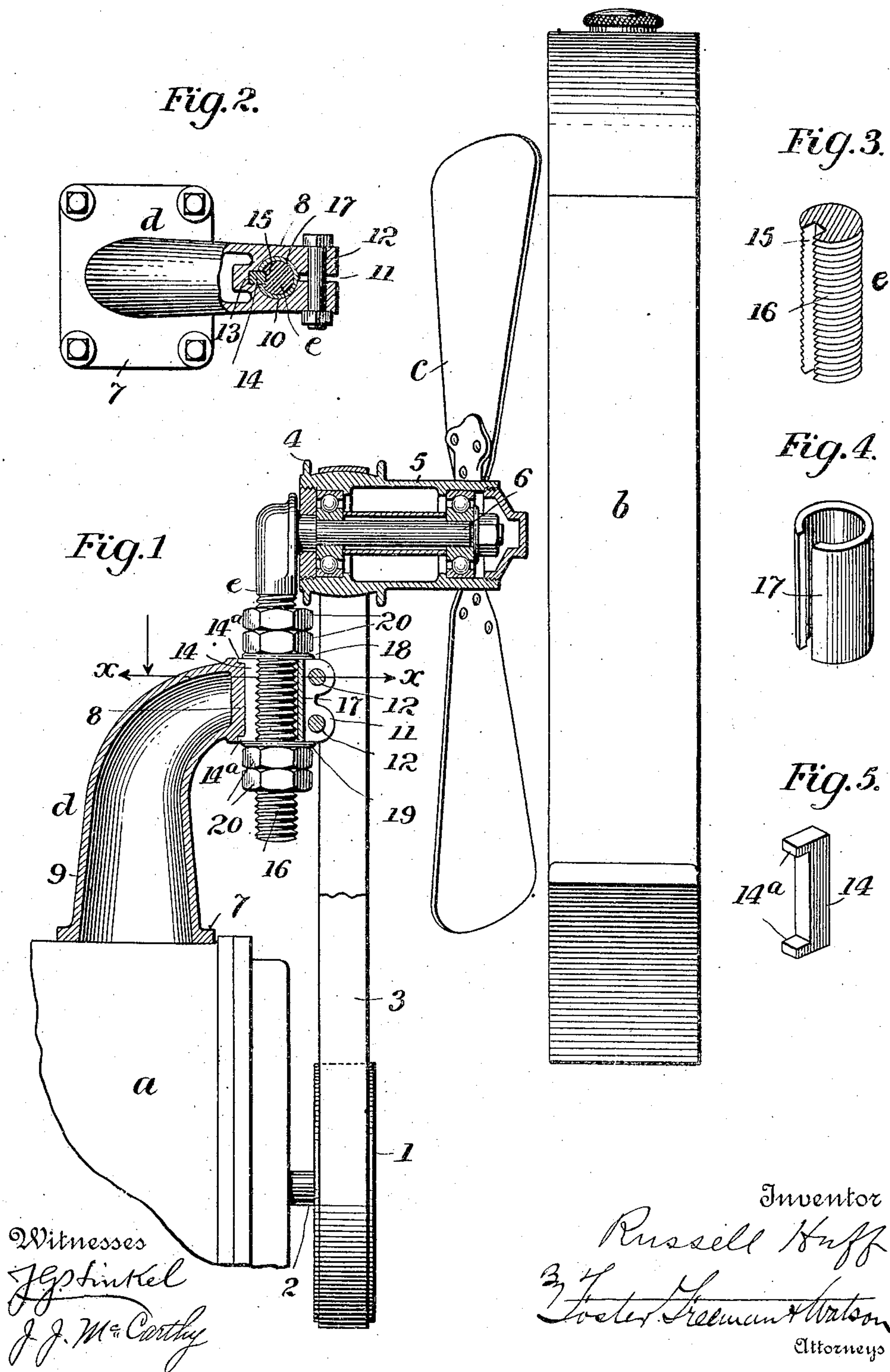


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R. HUFF.
RADIATOR FAN FOR MOTOR VEHICLES.
APPLICATION FILED MAR. 26, 1907.



Witnesses
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UNITED STATES PATENT OFFICE.

RUSSELL HUFF, OF DETROIT, MICHIGAN, ASSIGNOR TO PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF WEST VIRGINIA.

RADIATOR-FAN FOR MOTOR-VEHICLES.

No. 891,697.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed March 26, 1907. Serial No. 364,724.

To all whom it may concern:

Be it known that I, RUSSELL HUFF, a citizen of the United States, and resident of Detroit, Wayne county, State of Michigan, have invented certain new and useful Improvements in Radiator-Fans for Motor-Vehicles, of which the following is a specification.

This invention comprises certain improvements in devices for supporting and adjusting fans employed on motor vehicles for cooling the radiators used in connection with explosive engines.

The details and advantages of the improvements will be pointed out in the following specification, taken in connection with the accompanying drawing in which,

Figure 1 is a view showing my improved fan supporting device partly in central vertical section and partly in side elevation, the radiator and a portion of an explosive engine being also shown in side elevation; Fig. 2 is a section on the line X—X of Fig. 1; Fig. 3 is a perspective view of part of the adjustable stem or standard, and Figs. 4 and 5 are similar views of the split bushing and key.

Referring to the drawing, *a* indicates one end of the crank casing of an explosive engine, *b* indicates the radiator and *c* indicates the fan which is supported, opposite the radiator, by means of my improved adjustable supporting device. A pulley 1, upon the shaft 2, which is driven by the engine, is connected by a belt 3 to a pulley 4 on the fan hub 5, so that when the engine is running the fan is driven by the belt and draws air through the radiator.

The support for the fan comprises a bracket *d*, which is secured to the engine casing, and a threaded stem or standard *e*, which is adjustably secured to the bracket and has at its upper end a spindle 6 upon which the fan hub is mounted by means of suitable ball bearings, as shown. The bracket *d* is preferably made of aluminum, and cast hollow throughout the greater portion of its length, for the sake of lightness, and it is provided with a suitable base 7 for attachment to a fixed part of the engine. As shown in the drawing, the upper portion 8 of the bracket is turned over substantially at right angles to the trunk or body portion 9 and said end portion 8 has a cylindrical opening 10 bored through it and a

slot 11 extends from said opening to the end of the bracket. A pair of clamping bolts 12 extend through the split end of the bracket. By turning the nuts on the bolts 12, the size of the opening 10 may be varied, as will be obvious, the end 8 of the bracket thus forming a clamp. The opening 10 is provided with a keyway 13, and a key 14 is arranged within said keyway and provided with flanged heads 14^a, which engage the bracket at each end of the opening and prevent longitudinal movement of the key when the parts are assembled. The stem *e* is also provided with a keyway 15 into which the key extends when the parts are assembled. The stem *e* extends through the opening 10, and as the bracket is made of aluminum, the threads 16 on the stem would cut into the aluminum if the stem were clamped directly by the walls of the opening 10. In order to avoid this, the stem *e* is made smaller than the opening 10, and a split sleeve or bushing of steel 17 is interposed between the walls of said opening and the threaded surface of the stem. As clearly shown in Fig. 2, the key 14 extends through the slot in the bushing and engages the keyways in the bracket and the stem. When the clamping bolts are tightened, the sleeve or bushing is compressed and grips the threaded surface of the stem. The key prevents the stem from turning and thus the fan spindle is always held in the same direction with respect to the bracket. Washers 18 and 19 are arranged upon the stem, above and below the opening in the bracket and nuts 20 for adjusting and locking the stem are arranged upon the stem, above and below the washers.

When it is desired to adjust the fan spindle so as to tighten or loosen the belt, the clamping bolts 12 are loosened and the nuts 20 are then turned to adjust the stem *e* in the proper direction. After the stem has been adjusted, the clamping bolts are tightened to grip the stem within the sleeve or bushing and the nuts 20 are set so as to cause the bracket to be clamped between the washers 18 and 19. The stem is thus clamped in position by the nuts on the stem and also the clamping bolts.

By employing the split steel bushing between the stem or spindle and clamp, I am enabled to make the bracket entirely out of aluminum and to key the stem to the bracket,

so as to prevent the stem from turning, and to grip the threaded surface of the stem firmly without injury to the aluminum clamp.

What I claim is

- 5 1. In an adjustable fan support, a bracket having a clamp, a threaded stem within said clamp, said stem having a fan spindle connected therewith and said clamp and stem having keyways, a key fitting within
10 said keyways, and a split sleeve or bushing interposed between said spindle and clamp.
2. In an adjustable fan support, a bracket having a clamp, a threaded stem within said clamp, said stem having a fan spindle con-
15 nected therewith and said clamp and stem having keyways, said key having flanged ends adapted to engage the bracket and prevent longitudinal movement of the key, and a split sleeve or bushing interposed between
20 said spindle and clamp.
3. In an adjustable fan support, a bracket having a clamp, a threaded stem within said clamp, said stem having a fan spindle con-
25 nected therewith and said clamp and stem having keyways, a key fitting within said keyways, a split sleeve or bushing interposed between said spindle and clamp, and adjust-
ing nuts upon said stem.
4. In an adjustable fan support, an alu-
30 minum bracket having a split bearing provided with a keyway, a threaded stem within said bearing, said stem being also provided with a keyway and having a fan spindle con-
nected therewith, a key fitting within said
35 keyways, a split sleeve or bushing interposed between said spindle and the walls of said bearing, and means for clamping the bearing about the sleeve.
5. In an adjustable fan support, an alu-
40 minum bracket having a split bearing provided with a keyway, a threaded stem within said bearing, said stem being also provided

with a keyway and having a fan spindle con-
nected therewith, a key fitting within said
keyways, a split sleeve or bushing interposed 45
between said spindle and the walls of said bearing, means for clamping the bearing about the sleeve, and adjusting nuts upon said stem.

6. In an adjustable fan support, a bracket 50
having a clamp, a threaded stem within said clamp, said stem having a fan spindle con-
nected therewith, a sleeve or bushing inter-
posed between said spindle and clamp, and
means engaging both the stem and the 55
bracket for preventing the stem from turning within the clamp without obstructing its longitudinal adjustment.

7. In an adjustable fan support, a bracket
having a clamp, a threaded stem within said 60
clamp, said stem having a fan spindle con-
nected therewith, a split stem or bushing in-
terposed between said spindle and clamp, and
means engaging both the stem and the
bracket for preventing the stem from turning 65
within the clamp without obstructing its longitudinal adjustment.

8. In an adjustable fan support, a bracket
having a clamp, a threaded stem within said
clamp, said stem having a fan spindle con- 70
nected therewith and having a keyway, a
split sleeve or bushing interposed between
said spindle and clamp, and a device engag-
ing the bracket and extending through the
slot in said sleeve and into said keyway for 75
preventing the stem from turning within the clamp.

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

RUSSELL HUFF.

Witnesses:

ALLEN LOOMIS,
VINCENT LINK.