Sept. 4, 1956 A. CLAAS 2,761,432

APPARATUS FOR CLEANING RADIATORS OF INTERNAL COMBUSTION ENGINES

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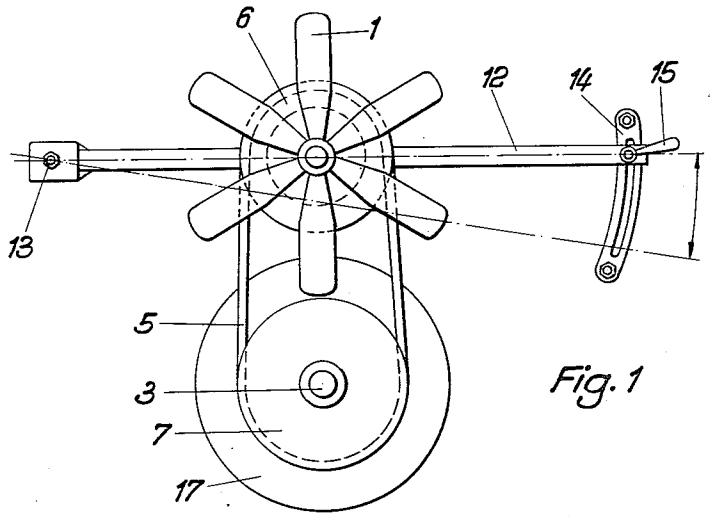
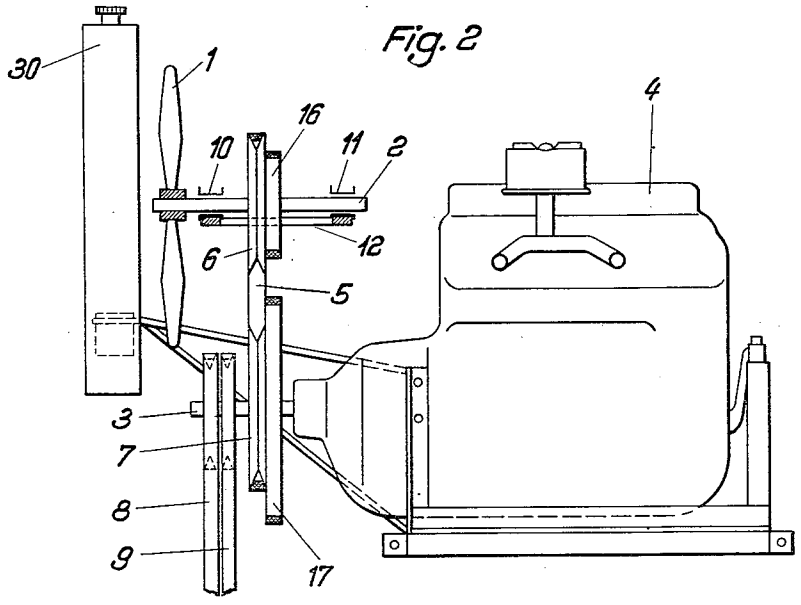


Fig. 1

Fig. 2



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Fig. 3

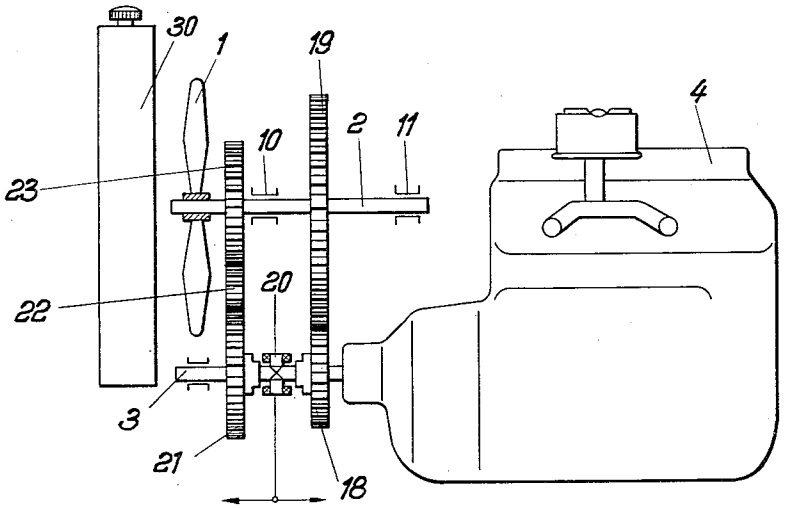
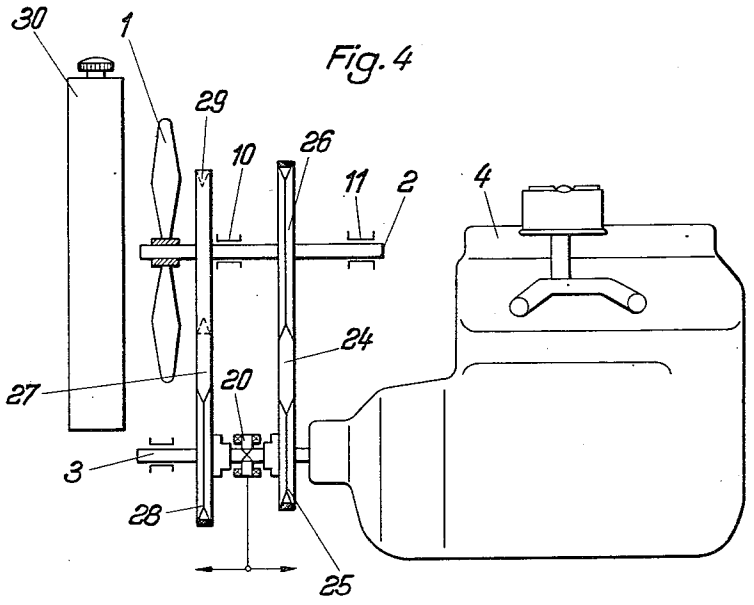


Fig. 4



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2,761,432

APPARATUS FOR CLEANING RADIATORS OF INTERNAL COMBUSTION ENGINES

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Application January 6, 1954, Serial No. 402,455
Claims priority, application Germany April 5, 1952
2 Claims. (Cl. 123—41.49)

This invention relates to a method of and apparatus for rapidly and easily cleaning the radiators or coolers of internal combustion engines or other power units working in heavily dust-laden air.

It has been found for instance, that when internal combustion engines are used as built-in power units for combine harvesters the heavy clouds of dust developed during threshing cause blocking of the radiator fins, and dust, chaff and straw particles are drawn into the casing of the radiator by the continuous draught suction of the fan of the power unit. The dust and chaff form a coating on the radiator fins which renders effective cooling impossible, since equalization of the difference in temperature between the radiator and the surrounding air is impossible due to the insulating effect of the coating of dust and chaff. The immediate consequence is a rapid rise in the temperature of the radiator which in turn causes ovreheating of the power unit. The result is a drop in the efficiency of the engine and if the engine is not stopped sufficiently soon, the engine boils, the pistons seize up, and the engine becomes useless.

Furthermore since the combine harvester having a built-in power unit is principally used in the summer months in high atmospheric temperatures, the proper cooling of the engine is essential to such an extent that the practicability of employing a combine harvester will depend on the effective cooling of the engine.

Hitherto, cleaning of the radiator has been effected by returning the machine to the yard or depot and removing the dirt by means of a compressed air blast. This procedure is, however, very troublesome and tedious, particularly at a harvest season when time is an essential factor.

The object of the present invention is to obviate or mitigate the above-specified disadvantages. This has been achieved by creating a kind of air blast by the radiator fan itself; it being feasible in units of the present kind not only to reverse but greatly to speed up the fan for this purpose.

Embodiments of the invention will now be described by way of example, with reference to the accompanying drawings in which:

Fig. 1 is a diagrammatic front view of a first embodiment of this invention;

Fig. 2 is a side elevation of the arrangement shown in Fig. 1;

Fig. 3 is a diagrammatic side elevation of a second embodiment; and

Fig. 4 is a diagrammatic side elevation of a third embodiment.

Referring to Figs. 1 and 2 of the drawings, the fan **1** mounted on the shaft **2** is driven from the shaft **3** of the engine **4** by means of the V-belt **5**, through the intermediary of two V-belt pulleys **6** and **7**. The V-belts **8** and **9** on the engine driving shaft **3**, drive the combine harvester. The fan shaft **2** is supported in the bearings **10**, **11** mounted on the rocking arm **12**, which swings about the pivot **13** and is movably held in the guide link **14** by a locking screw **15**. To enable the fan **1** to blow through the cooler **30** at a higher running speed than is normal the rocking arm **12** is swung to the lower stop of the guide link **14** and locked thereat by the screw **15**.

This causes the friction wheel **16** attached to the V-belt pulley **6** to make contact with the rim of a second friction wheel **17**, thus transmitting the drive from the shaft **3** to the shaft **2**. The pulleys **6** and **7** rotate in the same direction, whereas the friction wheels **16** and **17** rotate in opposite directions.

Referring now to Fig. 3 of the drawings, the drive can be transmitted from the driving shaft **3** of the engine **4** to the fan shaft **2** mounting the fan **1** and supported in the bearings **10**, **11**, by means of reversing spur gears. Gear **18** is loose on shaft **3** and is normally connected with the shaft by clutch **20**, so that it rotates gear **19**, fast on shaft **2**. The reversed direction and increased speed of rotation of the fan **1** necessary for blowing through the radiator or cooler **30** are obtained through the intermediary of the gearwheels **21**, **22**, **23** by engagement of gear **21** with the clutch **20** to the left.

In the arrangement shown in Fig. 4, the fan **1** is driven by the V-belt pulleys **25**, **26** when the clutch **20** is engaged to the right. When the clutch **20** is engaged to the left, however, the crossed belt **27** drives the fan **1** in the reverse direction of rotation and at a higher speed than is usual through the intermediary of the V-belt pulleys **28**, **29**, in such a manner that the radiator **30** is effectively blown through and freed from dust and dirt.

I claim:

1. A built-in radiator mechanism and cleaner for a power unit of agricultural type, comprising, a fan opposite the radiator, primary drive means adapted to be driven by the power unit for rotating the fan in a predetermined direction at a predetermined velocity in order to normally draw cooling air through the radiator, secondary drive means adapted to be driven by the power unit for rotating the fan in the opposite direction and at a higher velocity in order to occasionally blow a large and rapid air stream through the radiator and thereby to rid the radiator of dust, chaff, straw and the like, drawn into the radiator by the cooling air, said secondary drive means comprising a pair of friction wheels mounted respectively on the shafts of the power unit and of the fan; and means to make either drive means operative and the respective other drive means inoperative comprising a mechanism to move said friction wheels into and away from engagement with one another.

2. A built-in radiator mechanism and cleaner for a power unit of agricultural type, comprising, a fan opposite the radiator, primary drive means adapted to be driven by the power unit for rotating the fan in a predetermined direction at a predetermined velocity in order to normally draw cooling air through the radiator, secondary drive means adapted to be driven by the power unit for rotating the fan in the opposite direction and at a higher velocity in order to occasionally blow a large and rapid air stream through the radiator and thereby to rid the radiator of dust, chaff, straw and the like, drawn into the radiator by the cooling air, said secondary drive means comprising a pair of friction wheels mounted respectively on the shafts of the power unit and of the fan; and means to make either drive means operative and the respective other drive means inoperative comprising bearing means for the shaft of the fan and of one of the friction wheels and a rocking arm supporting the bearing means and pivotally mounted for controlled movement from a normal working position to a position wherein said friction wheels engage.

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