July 8, 1969 J. M. BIESECKER 3,453,824

EXHAUST SYSTEM FOR MOTOR BIKES

Filed Nov. 20, 1967

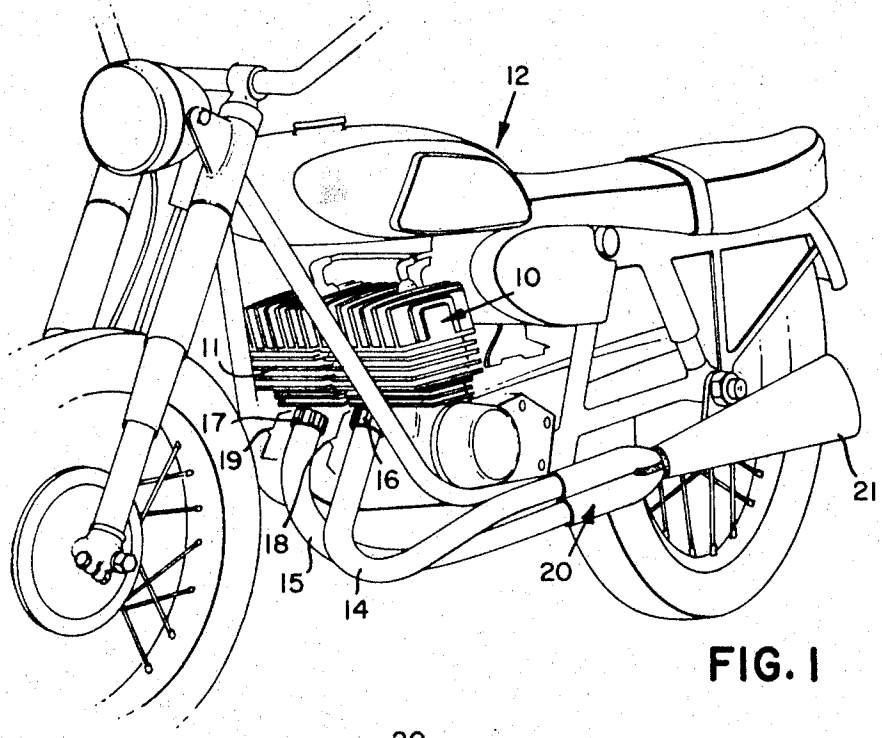


FIG. 1

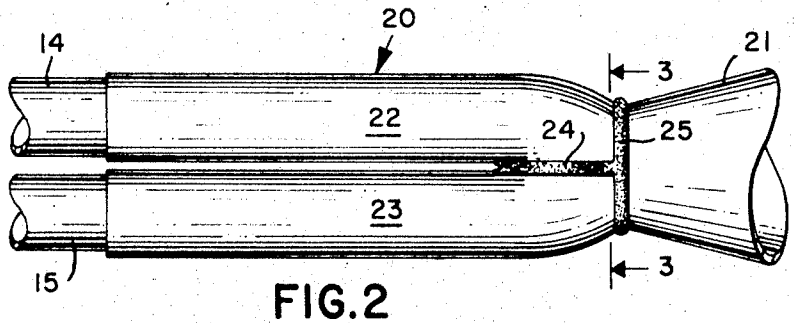


FIG. 2

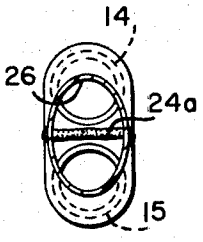


FIG. 3

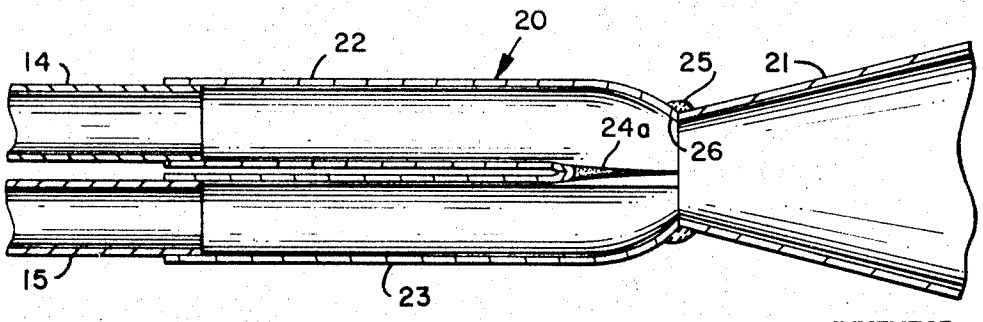


FIG. 4

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United States Patent Office 3,453,824 Patented July 8, 1969

3,453,824

EXHAUST SYSTEM FOR MOTOR BIKES

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Filed Nov. 20, 1967, Ser. No. 684,169
Int. Cl. F02b 27/00
U.S. Cl. 60—32 3 Claims

ABSTRACT OF THE DISCLOSURE

An exhaust system for motor bikes constructed to give improved performance and efficiency for the motor bike engines of the two or four cylinder types. The exhaust pipe from each cylinder is provided with a straight section approximately two inches long connected to the cylinder. From these straight sections the pipes are curved to the rear and joined with a relatively small angle formed between the outlets thereof. These outlets are somewhat constricted and attached to the front of an expanding chamber. The exhaust gas fed by one of the pipes to the chamber produces a suction in the other of the pipes whereby the back pressure in the other pipe is decreased. This action alternates between the pipes.

This invention relates to an exhaust system for motor bikes having two or four cylinders.

An object of this invention is to provide an improved exhaust system for motor bikes for improving the efficiency of the motor thereof, the exhaust system being constructed so that the resistance to the flow of the spent gases from the engine cylinders is reduced and the back pressure due to spent gases present in the exhaust pipes leading from the engine cylinders is also reduced.

Another object of this invention is to provide an improved exhaust system for motor bikes with two or four cylinders in which the exhaust pipes leading from the cylinders are each provided with a straight section of approximately two inches long connected directly to the cylinder and in which the pipes are then provided with a smooth curve leading to the rear of the motor bike where the exhaust pipes are attached to a connecting member, the outlet of which is welded to the small end of an expanding chamber, the connecting member having a baffle extending toward the inlet of the expanding chamber so that spent gas flowing from one of the exhaust pipes through the connecting member produces suction in the other of the pipes and draws out spent gas that may be lingering in the other of the pipes to reduce back pressure therein.

Other and further objects of this invention will be apparent to those skilled in the art to which it relates from the following specification, claims and drawing in which:

FIG. 1 is a side view of a motor bike provided with this improved exhaust system;

FIG. 2 is a fragmentary view of a part of the exhaust system showing exhaust pipes leading from the two cylinders joined to a connecting member which is attached to the small end of the expanding chamber;

FIG. 3 is a sectional view taken along the line 3—3 of FIG. 2; and

FIG. 4 is a longitudinal sectional view taken through the portion of the exhaust system shown in FIG. 2.

Referring to the drawing in detail, reference numerals **10** and **11** designate the engine cylinders of a two-cylinder motor bike **12** which is of conventional construction. The engine cylinders **10** and **11** are provided with exhaust pipes **14** and **15**, respectively, which are connected to the engine cylinders by conventional couplings **16** and **17**, respectively. Exhaust pipes **14** and **15**, which are of equal

length, are provided with substantially straight sections **18** and **19**, respectively, which are immediately adjacent to the cylinders **10** and **11**, respectively. I have found that by making the sections **18** and **19** straight for a length of about two inches improved efficiency and engine performance results so that increased mileage is obtained from the motor bike fuel. The reason for this, I believe, lies in the fact that these straight portions provide reduced resistance to the outward flow of the spent gases from the engine cylinders. The flow of the spent gases from the engine cylinders is also facilitated by the configuration of the connecting member **20** and the expanding chamber **21**. The exhaust pipes **14** and **15** are attached by welding to the connecting member **20** which is attached to the small inlet of the expanding chamber **21**, the large end of which is open to the atmosphere so that the exhaust gases flow out thereof.

The connecting member **20** is made by sawing a triangular section out of the middle part of a piece of pipe and thereafter bending the pipe so that the parts **22** and **23** are substantially parallel. The sawed edges are then abutting at **24** and welded as shown in FIGS. 2, 3 and 4. Thereafter a part of the bend is sawed off leaving the opening **26** as shown in FIG. 3. The opening **26** of connecting member **20** is joined to the small end of the expanding chamber **21** by the weld **25**. The welded joint **24** between the sections **22** and **23** of connecting member **20** also provides a baffle **24***a* extending toward the inlet of expanding chamber **21**. Expanding chamber **21** functions to suck the spent gases out of the pipes **22** and **23** through the outlet openings of these latter pipes past the baffle **24***a*. Thus, when the expanding chamber **21** is drawing spent gases out of pipe **22**, for example, this action provides a suction in pipe **23** so that any spent gases in pipe **23** are sucked out. As a result, when exhaust gas is fed into the exhaust pipe **15** from cylinder **11**, the back pressure in this pipe is reduced. The same is of course also true in the case of the exhaust pipe **14** from which the exhaust gases are sucked out by the action of expanding chamber **21** drawing spent gases out of pipes **15** and **23**. I have found that the angle of approach between each of the pipes **22** and **23** and the inlet of pipe **21** should be relatively small and preferably less than 30 degrees and that these pipes should be substantially parallel with the outlets thereof curved toward each other at this relatively small angle, as shown in FIG. 4. This angle is measured on each side of the center line defined by the baffle **24***a*. These angles are determined by the tangents to the curved surfaces of pipes **22** and **23** which direct the exhaust gases into the inlet of pipe **21** past the baffle **24***a*. The angle of the cone formed by the expanding chamber **21** is also relatively small and does not exceed 30 degrees.

What I claim is:

1. In an exhaust system for motor bikes employing motors with at least two cylinders, the combination comprising exhaust pipes attached to the front sides of the motor cylinders, each of said pipes communicating with inside of a different one of said cylinders, the inlet end portions of each of the exhaust pipes having a substantially straight portion of predetermined length immediately adjacent to and extending away from the corresponding cylinder to which it is attached, the portions of said exhaust pipes immediately following said substantially straight portions forming smooth curves downward and to the rear of the motor bike, an expanding chamber of substantially frusto-conical shape having an inlet at the smaller end thereof and an outlet at the larger end, means connecting the outlets of said exhaust pipes to the inlet of said expanding chamber, said connecting means comprising a hollow member having substantially parallel

channels connected to said exhaust pipes and having inwardly curved walls attached to the inlet of said expanding chamber, said connecting means also having a baffle extending toward the inlet of said expanding chamber so that exhaust gas passing through one of said channels past said baffle into said expanding chamber produces suction in the other of said channels.

2. In an exhaust system for motor bikes employing motors with at least two cylinders, the combination as set forth in claim 1 further characterized in that said connecting means comprises a single length of pipe which is shaped so that the opposite end portions thereof form said substantially parallel channels and said inwardly curved walls comprise parts of the mid-portion of said pipe, said mid-portion having a part thereof cut away to form an opening attached to the inlet of said expanding chamber.

3. In an exhaust system for motor bikes employing motors with at least two cylinders, the combination as set forth in claim 2 further characterized in that said baffle

is formed by welding abutting parts of the mid-portion of said pipe opposite said opening attached to said expanding chamber between said inwardly curved walls.

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U.S. Cl. X.R.

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