No. 742,409. PATENTED OCT. 27, 1903.

E. B. GALLAHER.

EXHAUST COUPLING FOR DOUBLE CYLINDER ENGINES.

APPLICATION FILED APR. 13, 1901.

NO MODEL.

Fig: 1.

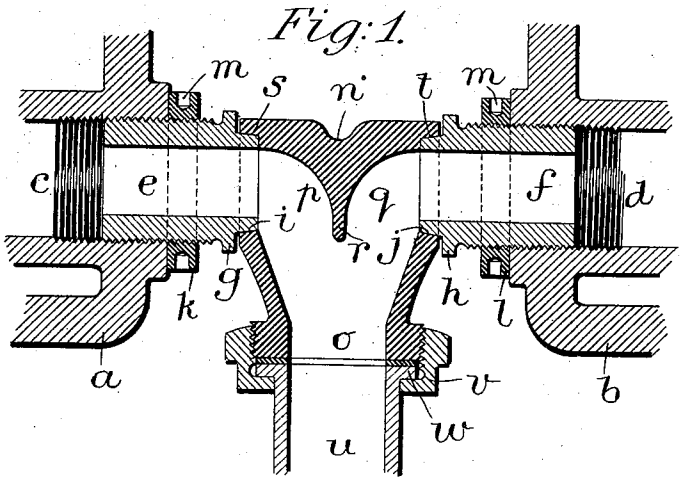


Fig: 2.

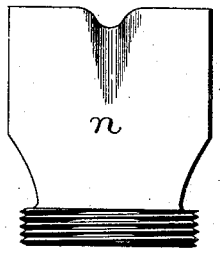


Fig: 3.

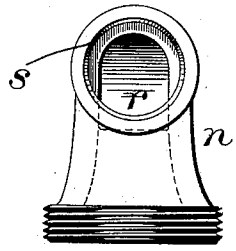


Fig: 4.

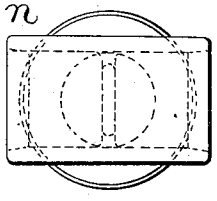


Fig: 5.

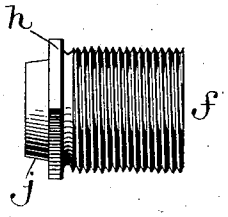
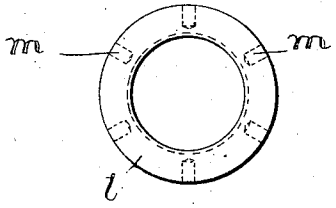


Fig: 6.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 742,409. Patented October 27, 1903.

UNITED STATES PATENT OFFICE.

EDWARD BEACH GALLAHER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SEARCHMONT MOTOR COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

EXHAUST-COUPLING FOR DOUBLE-CYLINDER ENGINES.

SPECIFICATION forming part of Letters Patent No. 742,409, dated October 27, 1903.

Application filed April 13, 1901. Serial No. 55,770. (No model.)

To all whom it may concern:

Be it known that I, EDWARD BEACH GALLAHER, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Exhaust-Coupling for Double-Cylinder Engines, of which the following is a specification.

My invention consists in an exhaust-coupling for double-cylinder engines, the object being to provide means for connecting the gas-ports of two adjacent cylinders with a main gas-pipe, in the present instance the two exhaust-ports of the cylinders with the main exhaust-pipe.

A further object is to provide means for securing and accurately mounting the coupling with respect to the two cylinders, which means is more particularly applicable for places where the space between the two cylinders is small and it is not practicable to couple the exhaust-pipe until after the cylinders have been secured rigidly in position.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents detail sectional views of portions of two adjacent cylinders of a double-cylinder engine, together with a central section through the means for coupling the exhaust-ports of the said cylinders with the main exhaust-pipe. Fig. 2 is a view in side elevation of the branch coupling. Fig. 3 is an end view of the same. Fig. 4 is a top plan view. Fig. 5 is a side view of one of the connecting-nipples, and Fig. 6 is a face view of the lock-nuts for locking the nipple in position against movement with respect to the coupling and cylinder.

The two cylinders of a double-cylinder engine are denoted by *a* and *b* and their respective gas-ports by *c* and *d*, which ports in the present instance are exhaust-ports. The ports *c* and *d* open through the adjacent faces of the cylinders.

A hollow nipple *e* has a screw-threaded engagement with the cylinder *a* at the port *c*, and a hollow nipple *f* has a screw-threaded engagement with the cylinder *b* at the port *d*. The surrounding walls of the ports *c* and *d* are screw-threaded for a considerable distance inwardly from their mouths, and the exteriors of the nipples *e* and *f* are screw-threaded from one end nearly to the other end thereof, so that the said nipples may be screwed into the ports a greater or lesser distance, as may be required.

The nipple *e* may be provided with a squared portion *g* and the nipple *f* with a squared portion *h* for the reception of a wrench for use in screwing and unscrewing the said nipples.

The end of the nipple *e* adjacent to the squared portion *g* is provided with an exterior taper *i*, and the nipple *f* is similarly provided with an exterior tapered end *j*, arranged to snugly engage seats in the coupling, to be hereinafter described.

A lock-nut *k* has a screw-threaded engagement with the exterior of the nipple *e*, and a similar lock-nut *l* has a screw-threaded engagement with the exterior of the nipple *f*. These lock-nuts in the present instance are shown as provided with series of holes *m* for use in connection with a spanner-wrench; but the said lock-nuts may be of any other suitable form, if so desired.

The branch coupling is denoted by *n*, and its interior is divided into a main port *o*, opening through the bottom of the coupling, and two branch ports *p* and *q*, opening through the ends of the coupling, the partition *r*, which forms the branch ports, preferably being of tapered form and extended to a point about in line with the bottoms of the mouths of the branch ports.

A tapered seat *s* is formed in the mouth of the branch port *p*, which seat is adapted to snugly fit the tapered end *i* of the nipple *e*. The mouth of the branch port *q* is similarly provided with a tapered seat *t*, arranged to snugly receive the tapered end *j* of the nipple *f*. This connection between the coupling and the nipples makes a gas-tight joint when the parts are in position.

The main exhaust-pipe *u* may be secured to the coupling, so as to form a continuation of the main port *o* therein, by means of a connecting-nut *v*, engaging a flange *w* on the

exhaust-pipe u and having a screw-threaded engagement with lower end of the said coupling.

The parts are assembled in the following manner: The lock-nuts k and l are screwed onto the hollow nipples a sufficient distance toward their tapered ends. The nipples are then screwed into the cylinders until there is a sufficient space between their tapered ends for the insertion of the coupling n. The nipples are then unscrewed from the cylinders a sufficient distance to cause their tapered ends to snugly engage the seats at the mouths of the branch ports in the coupling. To lock the parts in their assembled adjustment, the lock-nuts k and l are then turned until they are caused to snugly engage the adjacent faces of the cylinders.

It will be seen that the arrangement as above described permits the branch-port coupling to be accurately adjusted with respect to the two cylinders and also that the coupling may be secured in position where there is a very short space between the cylinders. It will be further seen that the coupling will not have to be turned, thus permitting the coupling to be secured to the exhaust-pipe before it is connected to the ports of the cylinders.

The tapered partition r within the coupling serves to direct the exhaust products of combustion from their respective cylinders downwardly into the main exhaust-pipe, the partition being of such a length that it will absolutely prevent any tendency of the exhaust products of combustion from one cylinder flowing toward the other cylinder after they reach the said partition.

While I have described the coupling in connection with the exhaust-ports of two cylinders, it is evident that it may be used with equal facility for connecting the inlet-ports of the cylinders with a main inlet.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. In a double-cylinder engine, a common coupling for the two cylinders and adjustable nipples connecting the said coupling with the adjacent ports of the cylinders, each of the said nipples having a screw-threaded engagement with its cylinder, and a seat engagement with the coupling, substantially as set forth.

2. In a double-cylinder engine, a common coupling for the two cylinders and nipples connecting the said coupling with the adjacent ports of the cylinders, each of the said nipples having a screw-threaded engagement with a cylinder and a tapered-seat engagement with the coupling, substantially as set forth.

3. In a double-cylinder engine, a common coupling for the two cylinders, nipples connecting the coupling with the adjacent ports of the cylinders, each of the said nipples having a screw-threaded engagement with the cylinder and a tapered-seat engagement with the coupling and lock-nuts carried by the nipples for locking them in position, substantially as set forth.

4. In a double-cylinder engine, a common coupling for the two cylinders, nipples connecting the coupling with adjacent ports in the cylinders, the said nipples having screw-threaded engagements with the cylinders, the said coupling having tapered seats and the nipples having tapered ends fitted to snugly engage the said seats, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 8th day of April, 1901.

EDWARD BEACH GALLAHER.

Witnesses:
R. B. SEWARD,
M. A. STONE.