UNITED STATES PATENT OFFICE.

ROBERT SCHLAEPFER, OF ZURICH, SWITZERLAND, ASSIGNOR TO BUSCH-SULZER BROS.-DIESEL ENGINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

OPERATION OF ENGINES ON TAR.

1,183,038. Specification of Letters Patent. **Patented May 16, 1916.**

No Drawing. Application filed August 16, 1915. Serial No. 45,811.

To all whom it may concern:

Be it known that I, ROBERT SCHLAEPFER, engineer, a citizen of the Republic of Switzerland, and a resident of Zurich, Switzerland, have invented certain new and useful Improvements in the Operation of Engines on Tar, of which the following is a full, true, and complete specification.

The invention provides a means of avoiding the known objection to the use of tar as fuel in Diesel and like engines, that it clogs the fuel injecting organs, and to this end the invention covers the manner of starting the engine in operation. The direct starting of the engine on the tar being impossible, it has often been attempted to use first, some light mineral oil distillate, like kerosene or other similar or readily ignitible liquid fuel, and then after the combustion process has been established, to switch over to the tar. But the engines in which such methods are practised soon becomes clogged in their fuel pumps, fuel atomizers and other parts and the operation thereafter becomes defective and unsatisfactory, as the result of causes generally assumed to be inherent in the tar fuel. It has been ascertained however, and is herein stated, that such effects result from the too abrupt change from the light to the heavy fuel and from a sort of precipitation caused by the contact, within the fuel organs, of the light, igniting fuel with the heavy tar, and it is the purpose of the present invention to avoid such contact and the resulting sticky or pitchy precipitate or residuum, by interposing an intermediate fuel between the light and heavy. This auxiliary and intermediate fuel is selected to be neutral toward both the light fuel and the heavy tar, that is to say, it is a fuel of intermediate weight which is neither precipitated by the light fuel nor itself precipitates the tar. By thus separating the starting and working fuels, the engine may be operated indefinitely without clogging. After being set in motion by compressed air in the usual way, the engine is first run for a few moments on the light fuel, such as kerosene. The supply of this oil is then interrupted and a neutral, intermediate tar oil distillate, such as coal tar oil or lignite tar oil is turned on and the engine continued in operation on that fuel until the fuel pumps, pipe lines, spray nozzles, etc., are washed clean of the light oil. Thereupon the intermediate fuel is shut off and the tar turned on. Since the light oil is thus kept out of contact with the tar, and the tar distillate is neutral to both, no precipitation or deposit of pitch or pitchy substance can take place and clogging is avoided.

I claim—

1. The method of operating internal combustion engines on tar as fuel and of preventing them from clogging, which consists in first operating the engine on light fuel oil to establish the combustion process, then temporarily on a slightly heavier oil and finally introducing the tar.

2. The method of operating Diesel engines on tar as a fuel, which consists in starting the engine on a light or readily ignitible oil, then operating it temporarily on an intermediate fuel and then on the tar, said intermediate fuel being neutral to both the other fuels.

In testimony whereof, I have signed this specification in the presence of two witnesses.

ROBERT SCHLAEPFER.

Witnesses:
CARL GUBLER,
BERTHA C. GROB.