

**THE SLIDE-VALVE AND ITS
FUNCTIONS, WITH SPECIAL
REFERENCE TO MODERN PRACTICE
IN THE UNITED STATES WITH 90
DIAGRAMS AND ILLUSTRATIONS**

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The Slide-Valve and Its Functions, with Special Reference to Modern Practice in the United States with 90 Diagrams and Illustrations by Julius Begtrup

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JULIUS BEGRUP

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BY

JULIUS BEGRUP, M. E.



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PREFACE.

with a

THE Slide-Valve has been called the heart of the steam engine, and the simile is not badly chosen; for the valve is a distinct and vital part of the engine, controlling and regulating the circulation of its life-fluid in a manner not entirely unlike that of a living heart. It is the office of the slide-valve to direct the motion and action of this subtile and expensive fluid to best advantage and without waste, so as to make the engine an effective and economical motor.

As the valve must be designed so as to effect an economical steam distribution in the cylinder, it has attained a peculiar significance in scientific steam engine construction; but durability and permanency of form are requirements not less imperative, and they involve constructive problems of a different order. In recognition of this fact an attempt has been made in this work to treat the subject with due regard to the various requirements of modern practice. The fundamental principles are fully explained, and are illustrated by new graphical methods, and a number of special valve constructions are described and analyzed, in order to exhibit in a comprehensive manner how the exacting conditions of higher steam pressure and higher speed have been met by modern engine-builders.

An endeavor has been made to present the subject-matter of this book in a condensed form, as being best adapted to the requirements of practical men, and the author has in this respect followed the suggestions of an extensive personal experience.

The information is presented in more or less explanatory form, which is necessary in order to preserve its scope and general character by the absence of a multiplicity of details; but lengthy explanations are studiously avoided, for it is the author's opinion that practical knowledge — which is the more complete knowledge — cannot be imparted by the use of many words. Nothing is fully comprehended before the learner can follow the thoughts of the teacher, but he must be allowed to learn this in his own way, or by his own efforts, if the acquired knowledge is to be of any actual use. All the book really can accomplish is to start the reader thinking in the right direction, which often may be done by a few carefully selected words.

Both verbal and graphical demonstrations are used, that one form may supplement the other. The verbal treatment is the broader, but the graphical representation is indispensable as an illustrative and explanatory supplement, and as far as the valve motion is concerned, it is the only method practiced by those who build engines, or make the drawings from which they are built. Further, the graphical representation has the advantage that it presents a number of associated facts in one frame, as it were; and it may, therefore, eventually lead to those broad conceptions which are of so great practical utility, and which the best verbal exposition sometimes may fail to disclose.

The valve-diagrams presented in this book have been used for the last ten years, on many different occasions, and they have given more general satisfaction than others which are better known; and the reader will doubtless share this opinion, if the methods here used are accorded a fair trial.

Comparatively few letters of reference are used in the text, and it is believed that this will make it easier to follow the demonstrations.

J. BEGTRUP.

JERSEY CITY, N. J., January, 1902.

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