

**MECHANISMS AND MECHANICAL
MOVEMENTS; A TREATISE ON DIFFERENT
TYPES OF MECHANISMS AND VARIOUS
METHODS OF TRANSMITTING, CONTROLLING
AND MODIFYING MOTION, TO SECURE
CHANGES OF VELOCITY, DIRECTION, AND
DURATION OF TIME OF ACTION**

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Mechanisms and Mechanical Movements; A Treatise on Different Types of Mechanisms and Various Methods of Transmitting, Controlling and Modifying Motion, to Secure Changes of Velocity, Direction, and Duration of Time of Action by Franklin D. Jones

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FRANKLIN D. JONES

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OF ACTION

BY

FRANKLIN D. JONES

ASSOCIATE EDITOR OF MACHINERY
AUTHOR OF "TURNING AND BORING," "PLANING AND MILLING,"
"GAGING TOOLS AND METHODS," ETC.

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PREFACE

THIS treatise on mechanisms and mechanical movements is intended for designers of machinery and for all interested in originating new mechanical devices or in developing and perfecting those now in use. In view of the fact that there is an almost endless variety of mechanisms, it might seem impracticable to deal with such a broad subject in a single volume of this size. As the classes of mechanisms, however, which differ radically in principle, are few in comparison with those which simply vary in form, it was considered not only practicable, but very desirable, to present in one volume a variety of mechanical devices representing different types of mechanisms and selected especially to illustrate important fundamental principles.

The designers of machines or mechanisms in general are constantly engaged in the solution of problems pertaining to motion and its transmission. The motion derived from some source of power must be modified to produce certain effects, and various changes in regard to velocity, direction, and time of action may be necessary. Frequently, the same result may be obtained by forms of mechanisms which differ entirely in principle and effectiveness, and it is essential to employ an approved method. The purpose of this treatise is not only to explain how various mechanical motions may be produced and controlled, but to show the relation between the theoretical and practical sides of the subject. The examples include many ingenious mechanical combinations and are practical designs which not only illustrate the principles involved, but indicate exactly how those principles are applied. An understanding of these concrete examples will prove much more beneficial than a study of abstract theories, which only give an inadequate

conception of their application in the design of mechanisms of various types.

Many technical graduates and draftsmen understand the proportioning of parts to safely withstand certain stresses more thoroughly than they do the use of different combinations of parts either for transmitting, reversing, or otherwise modifying motion to secure whatever action or effect may be required. Frequently, the stress involved or the strength of the parts is of little importance, and the principal problem is one pertaining to motion, especially in the development of new forms of mechanisms. While a general knowledge of mechanisms and their possibilities could be obtained by studying miscellaneous designs, this would involve considerable duplication of effort, because so many mechanical devices which vary as to form and purpose are identical in principle. The different forms of mechanisms described in this volume represent many distinct types, and they have been classified and arranged so that various modifications of the same general type may readily be compared.

The columns of *MACHINERY* were of valuable assistance in supplying information and illustrations regarding various types of mechanisms, especially of the classes common to the machine-building and machine-tool fields. Special mention should be made of the excellent examples of mechanisms obtained from the contributions of G. W. Armstrong and G. M. Meyncke. The study of mechanical movements is of especial importance at the present time, owing to the increasing use of automatic machines in almost every branch of manufacture, and this treatise is published in the belief that it will be of practical value to many designers, draftsmen, mechanical engineers, and inventors engaged in originating and planning new developments.

THE AUTHOR.

NEW YORK, *January*, 1918.

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