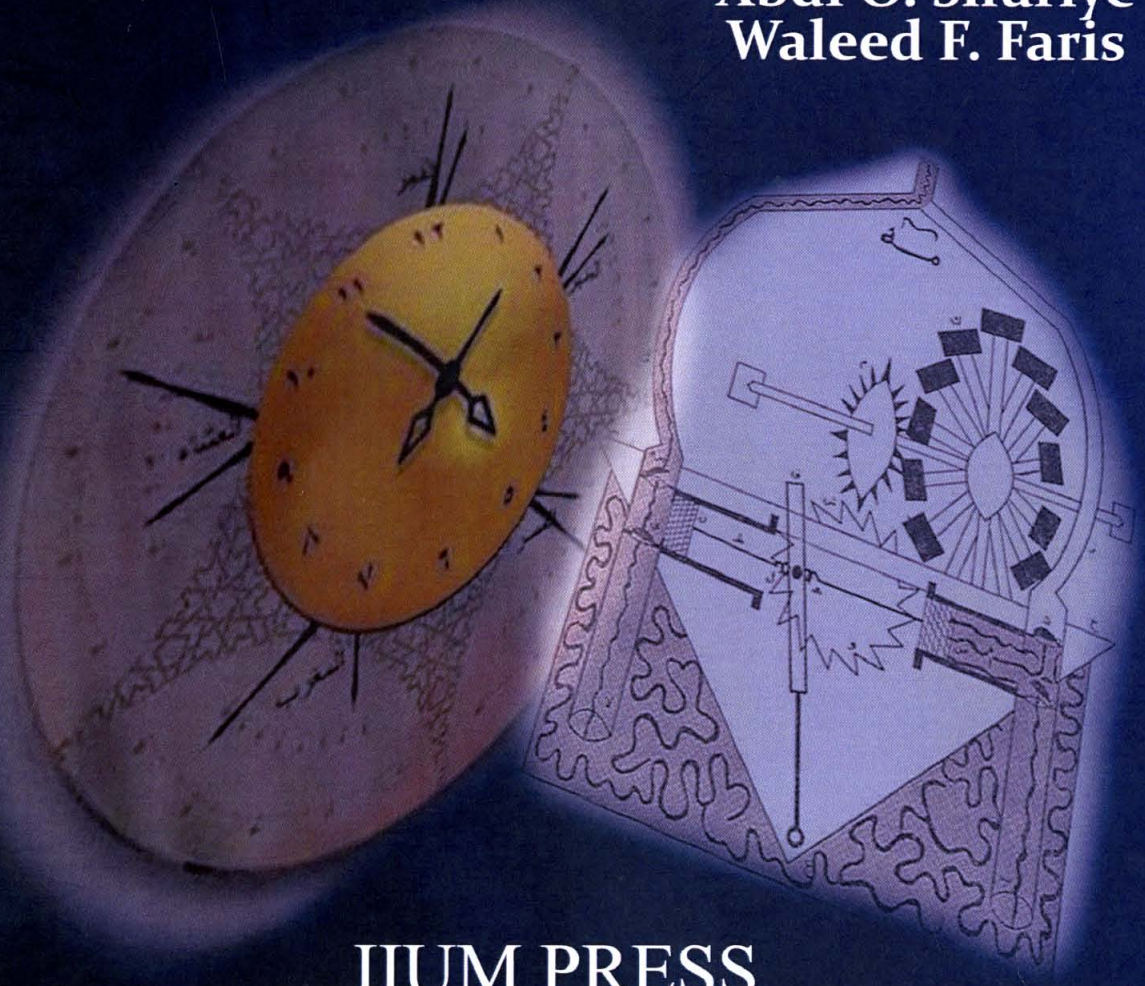
Contributions of Early Muslim Scientists to Engineering Studies and Related Sciences

Abdi O. Shuriye
Waleed F. Faris



IIUM PRESS
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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Editors
Abdi O. Shuriye
Waleed F. Faris

IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Abdi O. Shuriye & Waleed F. Faris : Contributions of Early Muslim Scientists to Engineering Sciences and Related Studies

ISBN: 978-967-418-157-4

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :
IIUM PRINTING SDN.BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan
Tel: +603-6188 1542 / 44 / 45 Fax: +603-6188 1543
EMAIL: iiumprinting@yahoo.com

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CHAPTER TWENTY SIX

AL- JAZARI CONTRIBUTION ON THE DEVELOPMENT OF WATER SUPPLY SYSTEMS

Shafie Kamaruddin, Abdi O. Shuriye
Fac. of Eng., International Islamic Univ. Malaysia (IIUM), Jalan Gombak, 53100 Kuala Lumpur, Malaysia.

26.1 INTRODUCTION

The objective of this study is to highlight Al-Jazari contribution in the development of water supply system. The significance of the study is that it places emphais on Al-Jazari and his inventions which laid the foundation for the machinery of irrigation and machine design. The methodology adopted in this research is library based and data is collected from reliable resources. The main focus of the chapter is to understand Al-Jazari's contribution in water raising machines which some of it can still be seen in several contemporary machines. The chapter explores the fifth chapter of his book which presents five different, useful inventions mainly to raise water for irrigation and domestic purpose.

26.2 AL-JAZARI'S THIRD WATER RAISING SYSTEM

Technically, Al-Jazari third invention is an improvement of his first two devices in two different brilliant ideas. The first improvement he did is to upgrade the animal power mechanism into a hybrid power mechanism. The invention present by Al-Jazari did not remove animal power system from his invention but rather he designs a complementary system to help the animal. Through the flow of water, the system can be fully autonomous, but if the flow is not enough (during dry season for, example) the animal can be use to drive the system. The second idea of his improvement is replacing the use of wheel pots with pot chains (Figure. 26.1) which more flexible because the proposed design can be adapted easily for different height by simply changing the length of the chain (Lofti R. & Said Z., 2010, p.6).

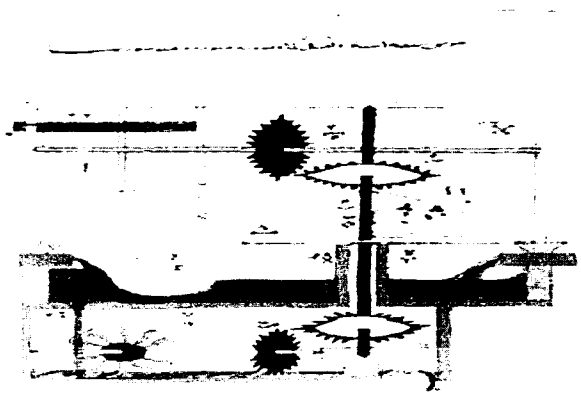

Figure 26.1: Al-Jazari's water powered Saqiya chain device