

**STEAM SHOVELS
AND STEAM
SHOVEL WORK**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649341900

Steam Shovels and Steam Shovel Work by E. A. Hermann

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

E. A. HERMANN

**STEAM SHOVELS
AND STEAM
SHOVEL WORK**

STEAM SHOVELS

—AND—

STEAM SHOVEL WORK.

By E. A. HERMANN, M. Am. Soc. C. E.

1894.

ENGINEERING NEWS PUBLISHING CO.,
NEW YORK.

Copyright, 1884, by Engineering News Publishing Co.

17/100-1-00-1-1-1

17/100-1-00-1-1-1

CONTENTS.

	Page.
PART 1.—Steam Shovels	1-19
" 1.—Steam Shovel Work	19-41
" 2.—Disposition of Material	41-55
" 3.—Cost of Steam Shovel Work	55-57

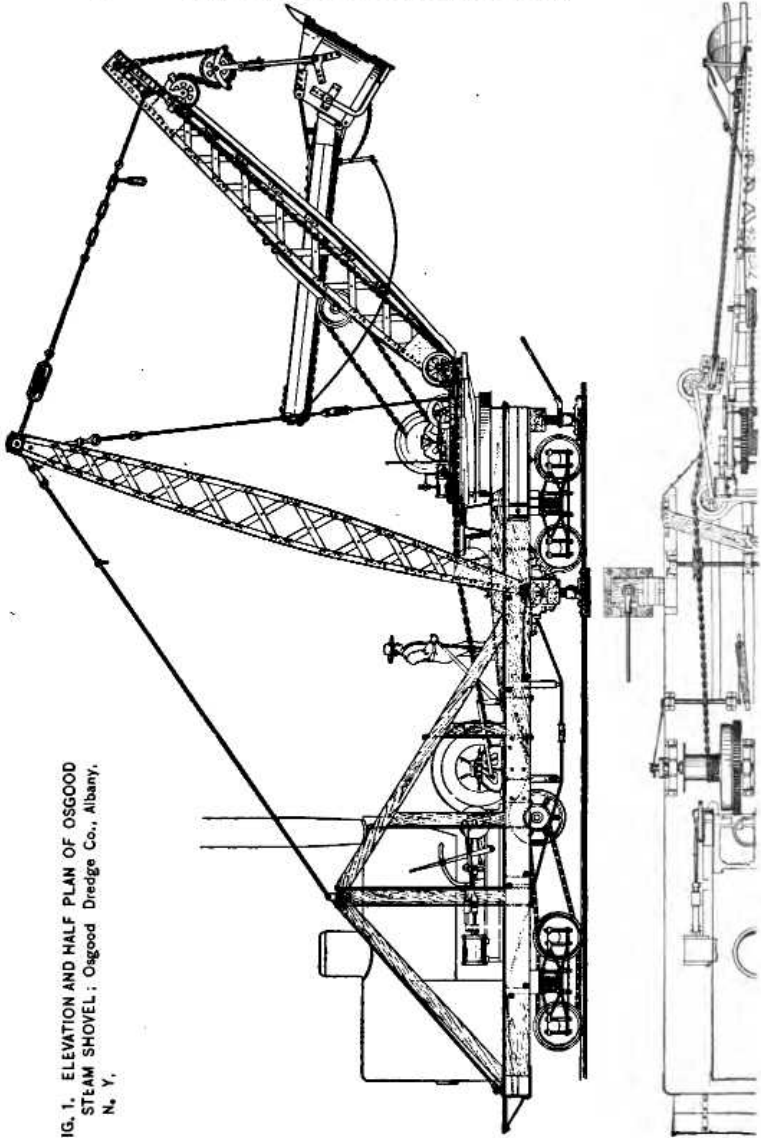


FIG. 1. ELEVATION AND HALF PLAN OF OSGOOD
STEAM SHOVEL; Osgood Dredge Co., Albany,
N. Y.

but even in this crude state it possessed many advantages for removing large masses of material. Its merits were recognized in its earliest stages, and with increased experience in its operation improvements were soon made which rendered it almost indispensable on all works requiring large quantities of excavation.

It was not until 1865, however, that the machine came into general use. About this time the largely increased railway construction created an active demand for the steam shovel, which demand was quickly supplied by several manufacturers, whose machines vary in distinctive designs of various parts, but the principles of operation are essentially the same in them all.

Types of Steam Shovels.—There are three types of steam shovels: First; machines mounted on trucks of standard gage, transported from place to place in freight trains (or propelled by their own power), and intended for railway work only. Second; machines mounted on wheels of other than standard gage, transported in sections by boat or wagon, or loaded complete on flat cars, and intended for both railway and other work. Third; machines mounted on wheels fitted for transportation over common roads, propelled by their own power, and intended for railway and other work.

The first machines built were of the second type. As now constructed they are mounted on a wide wooden frame or car body, supported by four small wheels of 7 ft. to 8 ft. gage, thus placing the machinery close to the ground, with a wide base of support. In transporting this machine from one place to another, not on the line of a railway, it is necessary to take it apart, forward the sections and put them together again at the site of the new work. The machine is built with a view to rapid dismantling and re-erection, and for work requiring a large machine for economical excavation, located in hilly country not yet made accessible by rail, or requiring transportation by boat, it is the machine most generally used. Its ready adaptability to all kinds of work in any location has made it the favorite machine with many general contractors whose work includes large contracts for railway and other excavation. For transportation by rail this machine is run onto an ordinary flat car, only the crane being detached and loaded on a separate car. With this manner of shipment the machine can be made ready for railway work very quickly, but for exclusive railway work

STEAM SHOVELS AND STEAM SHOVEL WORK.

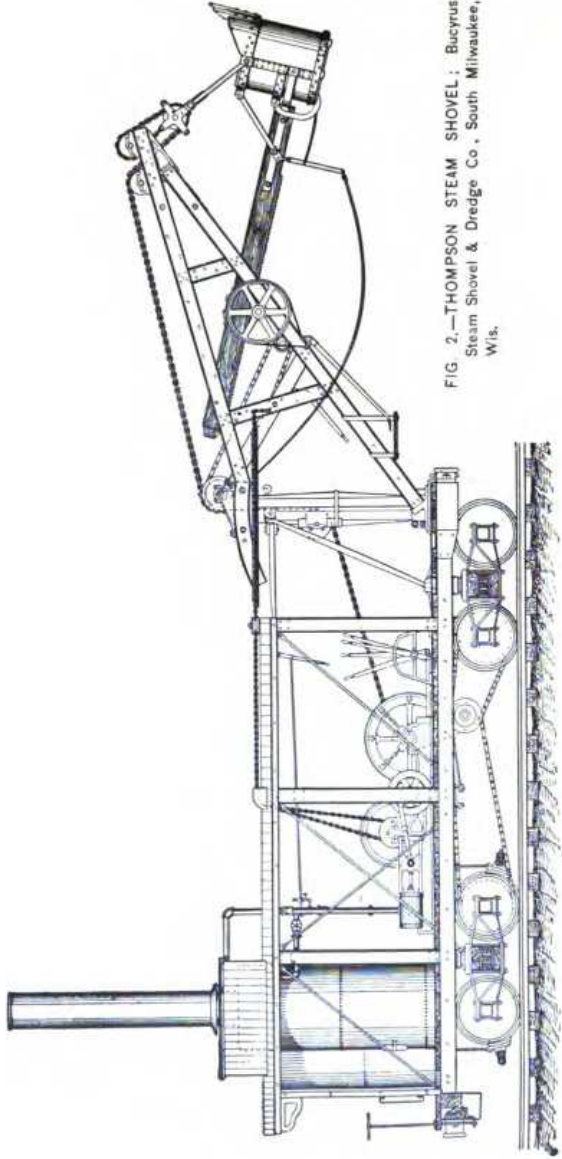


FIG. 2.—THOMPSON STEAM SHOVEL; Bucyrus
Steam Shovel & Dredge Co., South Milwaukee,
Wis.

a machine of a later design has come into use and is now generally preferred for this class of work.

This is the machine of the first type, resting on a wooden or iron car body, supported on trucks of standard gage, with an iron or steel crane from 18 to 26 ft. high over the track when in working order, and which can be lowered to 14 ft. to permit shipment through tunnels and under low overhead bridges.

Machines of the third type are generally of smaller capacity than the others; they have come into general use only within the past few years, but are now multiplying rapidly in numbers as their utility for nearly all kinds of work is better appreciated. They are especially adapted to smaller jobs and work not readily accessible by rail, but where common roads are available.

These three types are shown in Figs. 1 to 9, representing the machines of seven of the principal manufacturers.

Steam shovels will excavate any kind of material except solid rock, and they will load rock if it has been broken up by explosives into pieces of not more than 3-4 cu. yd. in size. The materials excavated by them are mostly sand, loose gravel, all kinds of clay, cemented gravel, hardpan, clays mixed with bowlders and other small stones, ore, phosphate rock, loose rock and thin seams of slate, shale or sandstone.

These machines are used for excavating material, loading it on cars or wagons for ballasting tracks; for filling trestles, streets, roads, dams, lots and new city additions; for widening embankments for double track, side tracks, yards, shops and station grounds; for cutting down street, road and railway grades; gradings lots and new city additions, railway yards, shop and station grounds; widening cuts, removing land slides, stripping coal fields, ore beds and stone quarries; digging canals and drainage ditches, loading clays for brick yards, etc.

Construction of Steam Shovels.—The general plan of construction of the machines, shown in Figs. 1 to 9, is essentially the same in all, and consists of a strong frame, mounted on wheels, forming the base to which all working parts are attached. The boiler and machinery are placed near the rear end of the frame, and the mast, or post, and crane at the front end. The crane is made in two pieces connected only at the top or point, and at the foot of the mast. Between these pieces, serving as guides, is the dipper handle, carrying at its farther end the dip-