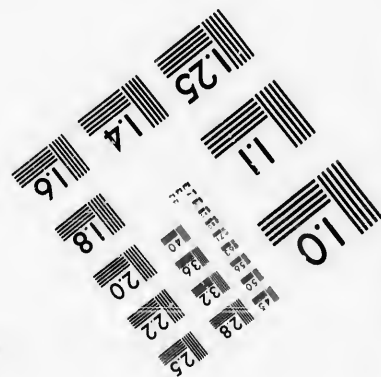
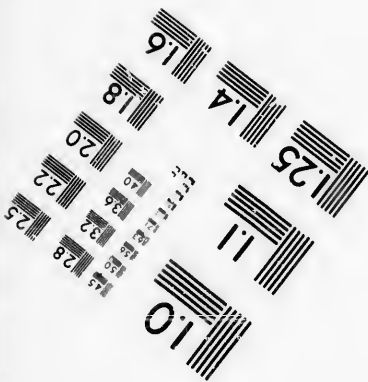
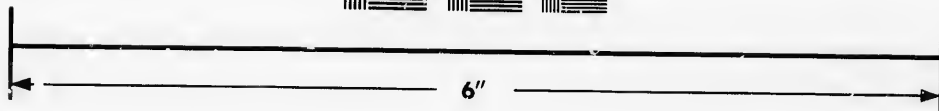
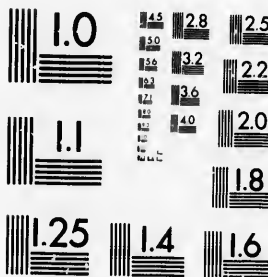


**IMAGE EVALUATION
TEST TARGET (MT-3)**



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503



**CIHM/ICMH
Microfiche
Series.**

**CIHM/ICMH
Collection de
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques



© 1986

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distorsion le long de la marge intérieure
- Blank leaves added during restoration may
appear within the text. Whenever possible, these
have been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Includes supplementary material/
Comprend du matériel supplémentaire
- Only edition available/
Seule édition disponible
- Pages wholly or partially obscured by errata
slips, tissues, etc., have been refilmed to
ensure the best possible image/
Les pages totalement ou partiellement
obscurcies par un feuillet d'errata, une pelure,
etc., ont été filmées à nouveau de façon à
obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

The copy filmed here has been reproduced thanks to the generosity of:

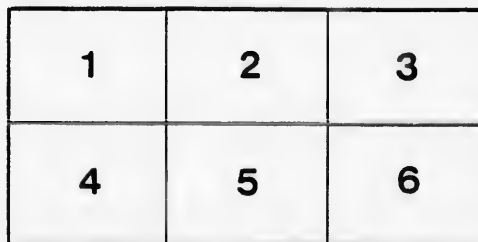
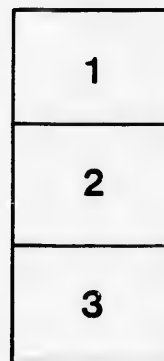
D. B. Weldon Library
University of Western Ontario
(Regional History Room)

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

D. B. Weldon Library
University of Western Ontario
(Regional History Room)

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

I N TRANSMISSION
N FUEL :::::::
N ATTENDANCE :
N SPACE :::::::



-ECONOMY-

ALL SECURED BY THE
WATEROUS AUTOMATIC
- * ENGINE * -

CATALOGUE of
AUTOMATIC
ENGINES.

1844

The Waterous

Engine Works Company

Brantford

Canada

1899

Established over 45 years . . .

INTRODUCTORY

••• **THE Waterous High-Grade Automatic** commands the attention of all requiring an economical power, especially for driving electric light plants, as it possesses those qualities most essential to a perfect light without the complicated adjustments so often found in automatic engines, and which are generally a source of great annoyance and expense.

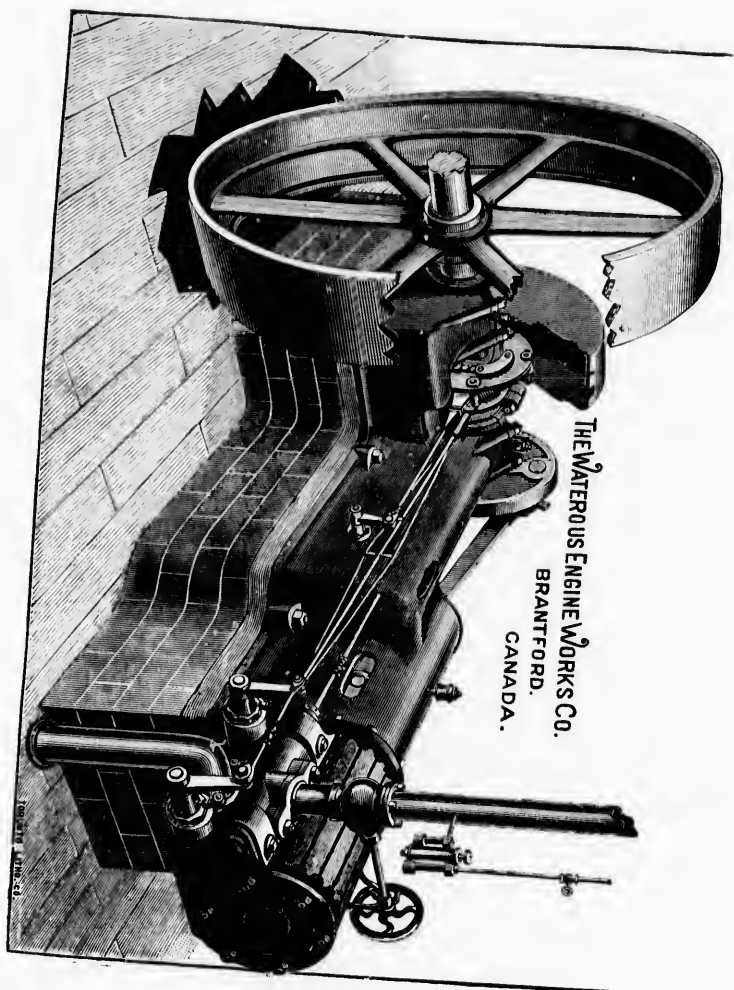
Being a 4-valve cut-off engine, it is applicable to all places where economy in fuel is required, and being of moderately high speed—two or three times greater than the Corliss, and others of that type—it is economical in communicating its power, belting direct to high speed machinery.

Again, it is economical in first cost over the slower speed engines.

To anyone requiring an engine we are prepared to substantiate these claims by a full guarantee.

January 1st, 1892.

THE WATEROUS ENGINE WORKS CO.



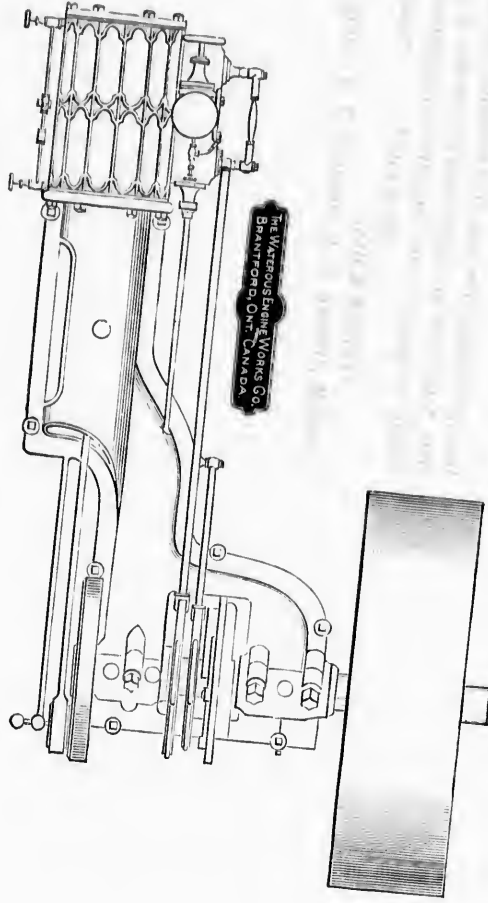
THE WATEROUS ENGINE WORKS CO.
BRANTFORD.
CANADA.

THE WATEROUS ENGINE WORKS CO., LTD., BRANTFORD, CANADA.

DESCRIPTION OF ENGINE

The "Waterous Automatic" is a self-contained, high speed, four-valve, automatic cut-off engine, having two distinct exhaust valves, placed on the under side of the cylinder, as near the ends or heads as possible, thus making the steam ports or passages very short and direct. These valves are worked by one eccentric, which is secured to the engine shaft, thus making their action under all conditions a positive one. These valves are of the circular type, operated by steel spindles passing through hardened steel bushes placed in heads of steam chests, so that no packing is here required.

The cut-off valves (which are of the piston type) are placed on the side of the cylinder immediately above the exhaust valves, each having double ports or steam passages, which, when opened, allow a full volume of steam to pass through them into the cylinder, until it is cut off, thus preventing any wire-drawing of the steam. These valves are operated by an eccentric attached to the governor, which completely regulates the point of cut off, and as they are entirely



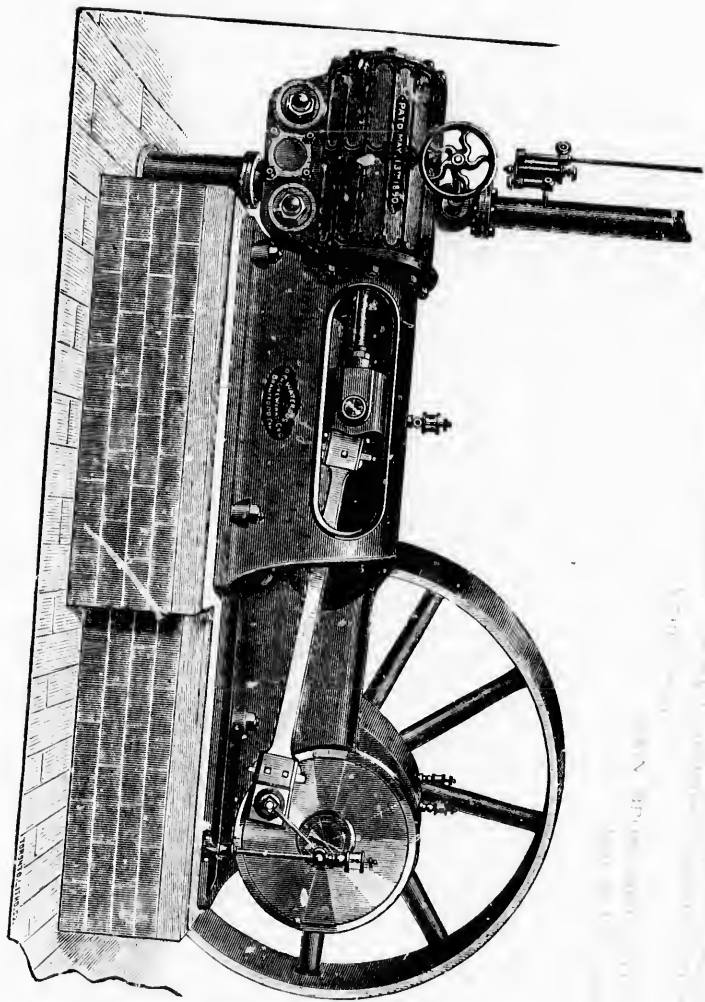
The Waterloo Engine Works Co.
Brantford, Ont. Canada

THE WATERLOUS ENGINE WORKS CO., LTD., BRANTFORD, CANADA.

surrounded at all times by steam, they are counterbalanced, thus placing them under more easy control of the governor. Another advantage in arranging the valves in this manner is that when the steam has done its work in the cylinder, it is allowed to pass into the exhaust port under the valve, thus preventing any of the steam in the steam chest escaping, but retaining it until steam is again admitted into the cylinder.

As the governor is attached to the engine shaft, its effect upon the cut-off valves is always positive, and not liable to disarrangement, as is the case where belts are required to drive the governor.

All the wearing parts of the engine being made extremely large, and running in the best anti-friction metal boxes, they cannot give trouble from springing or getting out of line. The shaft, crank pin, piston-rod, valve-spindles and connecting rod are of steel. The main journals of the engine are finished with anti-friction metal liners, so arranged that they can be taken out at any time and replaced with new ones, also the boxes of the crank pin and cross head wrist are made in the same manner. The governor and eccentric are kept clear of accident by being entirely covered with a moveable case.



The Watson Sewing Machine Works, Co.
 Sole Importers - The Address is -
 100 Broadway, New York, N. Y.
 (The Watson Sewing Machine Works, Co.)
 Sole Importers - The Address is -
 100 Broadway, New York, N. Y.

THE WATSON SEWING MACHINE WORKS, CO. LONDON, ENGLAND

THE WATEROUS ENGINE WORKS CO., LTD., BRANTFORD, CANADA.

WE COMMEND THE WATEROUS AUTOMATIC to your favorable notice on the following grounds:

It has Great Economy, while occupying much less space for the same power.

MODERATELY HIGH SPEED, meeting in this respect the single valve automatic engine, while giving great improvement over it in economy,

Economy in Communicating Power.

Owing to its speed it belts direct without the aid of counter shaft while using but moderate size pulleys and belts.

Economical in its use from the strength of its parts and its form.

General accessibility and convenience.

Security from derangement of shaft by reason of being entirely self-contained.

All its parts being carried by one massive frame casting.

Perfect action and safety of governor, its construction being such that it is impossible for the engine to "run away."

All oilers are stationary and positive.

Duplicate anti-friction liners for wearing parts.

Steel shafts and pins that are ground true (the only way to secure perfect journals) and are in correct proportion to bore and stroke of cylinder.

Perfectly balanced valves controlled by governor with positive connections with superior adjustment give this engine surprisingly smooth running qualities with freedom from friction and economy of lubricants.

In addition to the above named points, the "Waterous" Automatic is **ECONOMICAL IN FIRST COST,** and unsurpassed in the every day economy of fuel and maintenance.


THE WATEROUS ENGINE WORKS CO, LT'D., BRANTFORD, CANADA.

AUTOMATIC ISOCHRONOUS REGULATION

The Automatic Cut-off Governor

is simple in construction and perfect in its operation. It is the simplest regulating device extant. Adjusted in perfect equilibrium, it is truly an isochronous governor, and produces a regulation equal to any ever before realized. All its parts are in sight, and are readily accessible for cleaning. It is secured to the shaft and connects through eccentric on main shaft direct to valve without the use of gearing, pulleys, shafts, or belts. It is attached to the valve direct, and gives an open port at the beginning of each stroke, admitting steam to piston-head at full boiler pressure, and varies the point of cut-off, as the resistance requires from the beginning to three-fourths of each stroke. It acts instantly, and cuts off the steam at a point that will just do the work and maintain the fixed speed of engine. The speed remains constant, regardless of the change of load or variation of steam pressure in boiler. The speed of the engine may be changed to suit requirements by shifting the weight.

THE WATEROUS ENGINE WORKS CO., LT'D, BRANTFORD, CANADA.

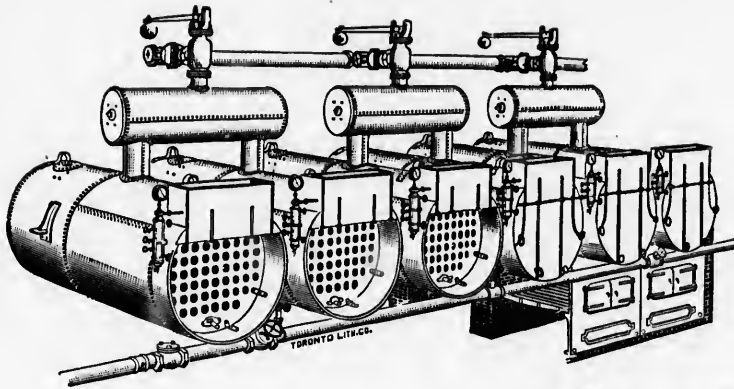
 **The Waterous Automatic Tandem
Compound Engine** built on the same substantial design as
the single cylinder engine—with or without condenser.

We supply this engine to our customers under full guarantee as to economy, durability and great ease of management, with perfect regulation.

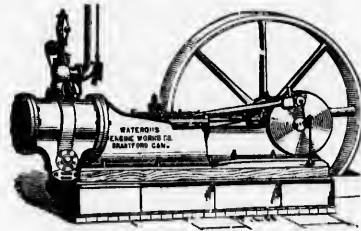
We shall be pleased to correspond with those requiring an economical, durable power.

THE WATEROUS ENGINE WORKS CO.,

BRANTFORD, CANADA.



Boiler Work of all Descriptions



Heavy Straight Line Engines and
General Saw Mill Machinery

