Dictionary of Weaves

PART I.
A COLLECTION OF ALL WEAVES FROM FOUR TO NINE HARNESS

By E. A. POSSELT
Editor of Possett's Textile Journal

Two Thousand Weaves Conveniently Arranged for Handy Use

Lexicon der Gewebemuster
Band I.

Manuel des Dessins du Tissage
Première Partie
Une collection de Tous Genres des Dessins du Tissage de Quatre à Neuf Lisses. Deux Mille Dessins Classés à Convenance.

TEXTILE PUBLISHING COMPANY
2154 North 21st Street, Philadelphia
London, Eng.: Sampson Low, Marston & Co., Ltd.
PREFACE

The purpose of these Hand Books is to bring the Various Branches of the Textile Industry conveniently arranged before the reader so that he may consult whatever subject of the Industry he is more particularly interested in.

The present Volume of this Series of Hand Books, the

Dictionary of Weaves, Part 1,

covers a collection of all the Weaves for Four, Five, Six, Seven, Eight and Nine Harness, and which will be followed by successively issued parts, covering all the weaves possible to be made up to Twenty-four Harness. One of these parts will be issued regularly every year, the next part to deal with Ten, Eleven and Twelve Harness Weaves, etc.

In designing these weaves, stress has been laid on selecting such weaves as will be of practical value.

The various repeats of this collection of weaves have been kept separate as much as possible; the repeat of the warp-threads, i.e., number of harnesses necessary for each weave is indicated on top of each page, whereas the numerals on the bottom of each page indicate a summary of the repeats of all weaves given, both warp and filling ways. The numeral in front of the multiplication sign indicates the repeat for the warp-threads, the numeral after the multiplication sign that for the filling.

The grouping of the various repeats of weaves on each plate are such that the eye can readily grasp the repeat filling ways of any one of the collection of weaves given, by consulting the sets of numerals at the bottom of the page, and which, provided more than one set of numerals are used, are indicated corresponding side by side to that of the arrangement of the weaves in the collection above it.

Wherever possible to do so four repeats of the weave are given in order to convey a good idea of its general effect in the fabric. To simplify subject to the designer, in most all instances complete repeats of a weave are given, whereas with such weaves where more than one repeat is shown in order to bring such weaves within compass of the plate (referring to large pronounced effects) by consulting the proper set of numerals on the bottom line the eye will readily grasp the repeat of the pattern.

With reference to other Branches of the Textile Industry and which will be taken up in successively issued volumes of these Hand Books, besides the serial continuation of the Dictionary referred to, Books on the following subjects are now in course of preparation: Designing and Weaving of Narrow Ware Fabrics; The Finishing of Ribbons and Trimmings; The Analysis of Textile Fabrics; Silk from Cocoon to Loom, etc.
VORWORT

Der Zweck dieses Werkchens

Lexicon der Gewebemuster, Band 1,


Jedes Jahr wird ein neuer Band erscheinen; der nächste wird die Gewebemuster für Zehn, Elf und Zwölf Schüfte bringen.

INTRODUCTION

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SIX HARNESS
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SEVEN HARNESS
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8 x 8

8 x 16
EIGHT HARNESS

8 × 8

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A Practical Treatise on the Construction and Application of Weaves for all Kinds of Textile Fabrics, Giving Also Full Particulars as to the Analysis of Cloth
By E. A. POSSELT
Editor of Posselt's Textile Journal

ABSTRACT OF CONTENTS:
DIVISION OF TEXTILE FABRICS ACCORDING TO THEIR CONSTRUCTION. SQUARED DESIGNING PAPER.
FOUNDATION WEAVES: PLAIN. TWILLS. SATINS.
DRAWING-IN DRAFTS.
DERIVATIVE WEAVES: RIB WEAVES. BASKET WEAVES. BROKEN TWILLS. STEEP TWILLS. RECLINING TWILLS. CURVED TWILLS. COMBINATION TWILLS. CORKSCREWS. ENTWINING TWILLS. DOUBLE TWILLS. CHECKERBOARD TWILLS. FANCY TWILLS. POINTE TWILLS. DOUBLE SATINS. GRANITES. COMBINATION WEAVES. COLOR EFFECTS.
PILE FABRICS: VELVETEENS. FUSTIANS. CORDUROY. CHINCHILLAS. CHENILLES. FRINGES. VELVETS. PLUSHES. TAPESTRY CARPET. BRUSSELS CARPET. DOUBLE FACED CARPET. DOUBLE PILE FABRICS. TERRY PILE FABRICS. SMOCK CARPET. AND RUGS. IMITATION TURKEY CARPET.
TWO PLY INGRAIN CARPET. GAUZE FABRICS. THE JACQUARD MACHINE. GOBELIN TAPESTRY. ANALYSIS OF TEXTILE FABRICS.

NOVELTIES IN DESIGNING: DESIGNING WEAVES BY FOURS CHANGES. SHADED FABRICS. SOLEIL WEAVES. CHECK PATTERNS. CRAPE WEAVES. HUCK PATTERNS. WOVEN TUCKS. CHIMPISTRIPE. BEDFORD CORDS. CROCODILE CLOTH. LARGE DIAGONALS. TO INCREASE THE THICKNESS OF A FABRIC WITHOUT SPECIAL BACKING THREADS. BRACKET WEAVES. FRINGES. PEARL EDGES.

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Specimen Page of "Technology of Textile Design."

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The case in the fabric are shown at the places indicated by a and f. Letter e indicates the place where the first warp-thread and the first pick meet—the point for commencing to "pick out."

Every time a warp-thread is found situated above the filling, put a corresponding indication on the respective square of the designing paper (with pencil marks or prick holes with the needle), whenever you find the filling covering (floating over) one, two or more successive warp-threads, leave correspondingly one, two or more successive squares empty in the lateral line of small squares upon the designing paper.

Fig. 1001

After the intersecting of number 1 pick has been clearly ascertained liberate this pick out of the fringed warp edge and duplicate the procedure with pick number 2, to be followed by picks 3, 4, 5, etc., until the repeat is obtained. If dealing with a soft-up filling yarn be careful in raising it, to avoid breaking the thread; also be careful that after the intersecting of the pick has been ascertained, it is entirely removed so that no small pieces of the thread remain in the fringed part of the warp; for if such should be the case it might lead to mistake in examining the next adjoining pick.

III. Ascertaining Raw Materials Used in the Construction of a Fabric.

In most cases an examination of the threads liberated during "picking-out" with the naked eye will be sufficient to distinguish the material used in the construction of the fabric yet sometimes it is found necessary to use the microscope or a chemical test for their detection. For examples: Tests might be required to show whether a certain thread is all wool or whether a certain thread is all silk, etc. For solving such questions, the following methods are given:

A common and ready method for ascertaining the difference between animal and vegetable fibres is to burn some of the threads of yarn in a flame. The vegetable fibre is composed of carbon, hydrogen and oxygen, while the animal fibre, in addition to these, contains nitrogen. By burning, the threads used in testing the first mentioned fibre will result in carbonic acid and water, while those of the latter, or of animal fibre, result in combinations containing nitrogen which element readily makes itself known by its peculiar smell or disagreeable odor similar to burnt feathers. Another point which it is well to note is the rapidity with which the thread composed of vegetable origin burns as compared with the burning of the thread having an animal substance for its basis. In the latter case, only a little bunch of porous carbon forms itself at the end submitted to the flame, and it does not form a flame as in the case of the former. As in some instances these two tests will be found unreliable, a more exact analysis may be required. If so, proceed after one or the other of the following formulas:

To Extract Cotton or other Vegetable Fibre in Woolen or Silk Fabrics.

Roll the sample to be tested in a concentrated solution of caustic soda or potash, and the wool or silk fibre will rapidly dissolve, producing a soapy liquid. The cotton or other vegetable
Posselt's Textile Journal
E. A. POSSELT, Editor and Publisher

From the standpoint of the practical information which it contains it is of value to every manufacturer, superintendent, overseer and operative, among whom it is widely circulated. It is the leading and by far the most valuable of all textile trade publications.

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Another interesting subject this Journal contains is the serial issue of the "Dictionary of Technical Terms Relating to the Textile Industry" as appearing regularly every month, nothing of its kind being published in any language.

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large, white, coarse, long wool, and the breed has become practically extinct in this country. The structure of the fibers is shown in Fig. 18. In the Cotswold, we find the hairs following the edge of the fibers are arranged in the natural state with the microscopic, we find extending through the scale a small amount of matter much more opaque than the matter surrounding it.

The fibers of this breed are given in the illustration of Cotswold wool. It appears to be of irregular thickness and to allow more light to pass through at certain places than at others.

The Cushendown Sheep is also of English origin. The wool is of the Cotswold race, and the Hereford Down wool. The wool produced by the Cushendown is finer and finer than that of the Cotswold, and is of from 6 to 7 inches in length, the average weight of the fleece being 4 pounds. It is a favorite sheep among the farmers of the south, and is highly esteemed. The wool of this sheep, as well as that from the Doreen, the Leicester, and the Lincoln, are the most important classes of what we term long staple wool, viz. the Mora and the southdown sheep, which are the most important in point of quantity and quality.

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The Mora Sheep. The original home of this animal is Spain, from there they have been spread.
The Jacquard Machine
ANALYZED AND EXPLAINED:
The Preparation of Jacquard Cards and Hints to Learners of Jacquard Designing
By E. A. POSSELT
Editor of Posselt's Textile Journal.

ABSTRACT OF THE CONTENTS:

History of the Jacquard Machine.
The Jacquard Machine — General Arrangement and Application.
Illustration of the different parts of the Jacquard Machine — Method of Operation, etc.
The Jacquard Harness — The Camden boards.
Tying-up of Jacquard Harness.
I. — Straight-through Tie-up.
II. — Straight through Tie-up for Repeated Effects.
III. — Straight-through Tie-up using Front Harness.
IV. — Centre Tie-up.
V. — Straight-through and Point Tie-ups Combined.
VI. — Straight-through Tie-up in Two Sections.
VII. — Tying-up for Figuring with an Extra Warp.

APPENDIX:
Preparing and Stamping of Jacquard Cards.
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HINTS TO LEARNERS OF JACQUARD DESIGNING:
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BY

E. A. POSSELT

Editor of Possett's Textile Journal


ABSTRACT OF THE CONTENTS

YARN AND CLOTH CALCULATIONS

Grading of the Various Yarns Used in the Manufacture of Textile Fabrics According to Size or Counts. To Find the Equivalent Counts of a Given Thread in Another System. To Ascertain the Counts of Twisted Threads Composed of Different Materials. To Ascertain the Counts for a Minor Thread to Produce, with Other Given Minor Threads, Two, Three or More Ply Yarn of a Given Count. To Ascertain the Amount of Material Required for Each Minor Thread in Laying out Lots for Two, Three or More Ply Yarn. To Ascertain the Cost of Two, Three or More Ply Yarn. To Find the Mean or Average Value of Yarn of Mixed Stocks. Red Calculations. Warp Calculations. Filling Calculations. To Ascertain the Amount and Cost of the Materials Used in the Construction of All Kinds of Plain and Fancy Cotton and Woolen Fabrics.

STRUCTURE OF TEXTILE FABRICS

The Nature of Raw Materials. Counts of Yarn Required to Produce a Perfect Structure of Cloth. To Find the Diameter of a Thread by Means of a Given Diameter of Another Count of Yarn. To Find the Counts of Yarn Required for a Given Warp Texture by Means of a Known Warp Texture with the Respective Counts of the Yarn Given. Influence of the Twist of Yarn upon the Texture of a Cloth. To Find the Amount of Twist Required for a Yarn if the Counts and Twists of a Yarn of the Same System, but of Different Counts, are Known. Influence of the Weave upon the Texture of a Fabric. To find the Texture of a Cloth. To Change the Texture for Given Counts of Yarn from one Weave to Another. To Change the Weight of a Fabric without Influencing its General Appearance. To Find Number of Ends Per Inch in Required Cloth. Weaves which will Work with the Same Texture as the three and three, four and four, etc., Twill. Selections of the Proper Texture for Fabrics Interlaced with Satin Weaves. Rib Weaves. Contrast Weaves. Two Systems Filling and One System Warp. Two Systems Warp and One System Filling. Two Systems Warp and Two Systems Filling.

ANALYSIS


SPEED, BELTING, POWER, Etc.


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Example.—Find the proper texture for warp and filling, and also ascertain the weight of funnel per yard fromloom (exclusive of selvage). Calculating: Warp 5-run, filling 3-run, backing 2-end. Warp, see Fig. 49 (8 warp threads and 12 picks in repeat). Take-up of warp, 10 per cent. Width of cloth in yard, 72 inches (exclusive of selvage), 6 oz. max., 6,000 yards per lb.

\[ 6 \times 60 = 360 \] yards of warp must be used per inch, and

\[ 72 \times 72 = 5,184 \] yards must be used in full warp.

5,184 \times 0.1 = 518.4 = 520 yards per inch, 6 oz. of warp yarn are wasted.

520 \times 72 = 37,440 \text{ yards of warp yarn are required per yard cloth woven.}

3-run yarns=500 yards per oz. 6 oz. \times 500 = 3,000 \text{ oz. of warp yarn are wasted.}

52 \text{ picks (50+2 extra) of face filling, 51=72=3,744 \text{ yards of face filling are wasted.}}

3,744 \times 0.1 = 374.4 = 375 \text{ oz. weight of face filling.}

26 \text{ picks (corresponding to face picks) of back filling, 26+2=28=1,872 \text{ yards of backing are required.}}

1,872 \times 72 = 134,880 \text{ yards of backing filling per yard.}

134,880 \times 0.1 = 13,488 \text{ oz. weight of backing.}

Warp, 6 oz. Face filling, 7.5 oz. Backing, 7.5 oz. 23 oz.

Answer.—Total weight of cloth per yard from loom (exclusive of selvage), 23 oz.

**SELECTION OF THE PROPER TEXTURE FOR FABRICS BACKED WITH WARP; i.e., CONSTRUCTED WITH TWO SYSTEMS OF WARP AND ONE SYSTEM OF FILLING.**

To ascertain the texture of the warp in these fabrics we must first consider the counts of the yarns as used for the face structure, and secondly the warp.

For ascertaining this texture (for the single cloth) we must consider the warp for the back warp, i.e., the setting of the same in the face cloth. If dealing with a warp of short repeat for the back warp (for example 1 to 1 twill) we must allow a corresponding heavier deduction from the thread as ascertained for the face cloth (about 30 per cent, for the 1 to 1 twill); whereas, if dealing with a facing warp for the back (for example the 8 to 8 satin) we will have to deduct less (about 10 per cent, for the 8 to 8 satin) from the previously ascertained texture of the face cloth. Since the 8 to 8 satin is about the most facing warp, as used for the backing, then, 10 per cent will be about the lowest deduction, and at the 1 to 1 twill is the most frequently interlacing warp, in use in the manufacture of these fabrics, thus 20 per cent deduction from the respective facing texture of the face cloth is the maximum deduction. To illustrate the subject more clearly to the student we will give both weaves as previously referred to with a practical example.

Example—Find warp texture for the following fabric: Fancy worsted twill weaving.

<table>
<thead>
<tr>
<th>Warp yarn</th>
<th>23 oz. wasted</th>
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</thead>
<tbody>
<tr>
<td>Back warp</td>
<td>10 oz. wasted</td>
</tr>
</tbody>
</table>

Formula: 23\% of 4 oz. = 0.9 oz. threads (side by side per inch).

90 \times 4 = 360 \text{ yards of warp, proper warp texture for the single structure.}

40 \text{ yards (20 per cent, deduction caused by the back warp 1 to 1 twill in the face structure).}
Textile Machinery
Relating to Weaving

By E. A. POSSELT
Editor of Posselt's Textile Journal.

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SHEDDING MECHANISMS.

THE BROOKFIELD SHEDDING MECHANISM.

The mechanism is shown in the accompanying plate, and Fig. 1 shows the complete shedding mechanism. Fig. 2 shows the top and bottom cylinders, with the weaver and jack attachments. Fig. 3 shows the left-hand mechanism for raising and lowering the middle bar. Fig. 4 shows the lift and the bar, the lift frame, the cylinder, and the roller for operating the shedding mechanism. Fig. 5 shows the right-hand mechanism for operating the shedding mechanism. Fig. 6 shows the top and bottom cylinders, with the weaver and jack attachments. Fig. 7 shows the left-hand mechanism for raising and lowering the middle bar. Fig. 8 shows the lift and the bar, the lift frame, the cylinder, and the roller for operating the shedding mechanism. Fig. 9 shows the top and bottom cylinders, with the weaver and jack attachments. Fig. 10 shows the left-hand mechanism for raising and lowering the middle bar. Fig. 11 shows the lift and the bar, the lift frame, the cylinder, and the roller for operating the shedding mechanism. Fig. 12 shows the top and bottom cylinders, with the weaver and jack attachments. Fig. 13 shows the left-hand mechanism for raising and lowering the middle bar. Fig. 14 shows the lift and the bar, the lift frame, the cylinder, and the roller for operating the shedding mechanism. Fig. 15 shows the top and bottom cylinders, with the weaver and jack attachments. Fig. 16 shows the left-hand mechanism for raising and lowering the middle bar. Fig. 17 shows the lift and the bar, the lift frame, the cylinder, and the roller for operating the shedding mechanism. Fig. 18 shows the top and bottom cylinders, with the weaver and jack attachments. Fig. 19 shows the left-hand mechanism for raising and lowering the middle bar. Fig. 20 shows the lift and the bar, the lift frame, the cylinder, and the roller for operating the shedding mechanism. 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