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Title: THICKNESS

1.0 INTRODUCTION

1.1 SCOPE

1.1.1 This document establishes the method for determining thickness of card stock and paper.

1.2 REFERENCES

1.2.1 Specifications

- 1.2.1.1 IBM-IRD 7-02-0101 -- Card Stock IBM Information Processing Cards
- 1.2.1.2 IBM-IRD 7-02-0201 -- Card Stock Nine Point Data Processing
- 1.2.1.3 IBM-IRD 7-05-0101 through 7-05-0108 -- OCR Bond Paper and Tag Paper

1.2.2 Standards

- 1.2.2.1 TAPPI T-402 -- Conditioning Paper and Paperboard for Testing
- 1.2.2.2 TAPPI T-411 -- Thickness and Density of Paper

1.3 AUTHORIZATION

1.3.1 This document is authorized by the IRD Manager of Quality Assurance.

1.4 TEST EQUIPMENT/MATERIAL

1.4.1 Federal Paper Micrometer, Model 691B-68; Y-7094, manufactured by the Federal Products Corporation, Providence, Rhode Island. Refer to drawing (Figure 1).

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- 1.4.2 Motorized Micrometer, Testing Machines, Inc., Model 549 (Figure 2)
- 1.4.3 Equivalent Thickness Test Instrument.
- 1.4.4 Feeler Gauge (a known accurate feeler gauge).

Thickness of feeler gauge shall be the mean value of paper being tested, i. e. 0.007 (0.178 mm), 0.009 (0.223 mm) or 0.005 (0.127 mm).

1.5 CALIBRATION -- Federal Micrometer (Model 691B -- Non-Motorized)

- 1.5.1 For correct setting of the dial indicator in respect to the movable arbor, a steel leaf feeler or thickness gauge in the same thickness range as the sample to be measured should be used.
- 1.5.2 Care must be exercised to ensure absence of dust or foreign matter which may accumulate between the plane surfaces or on the feeler gauge.

NOTE: Drawing a piece of card stock through the anvils will ordinarily pick up and remove any foreign matter.

- 1.5.3 When the thickness gauge is in constant use, it should be checked and recalibrated frequently throughout the day in the following manner:
 - 1.5.3.1 Lift operating anvil by bearing down on the operating lever.
 - 1.5.3.2 Place a clean steel leaf feeler gauge on the fixed or stationary anvil.
 - 1.5.3.3 Release operating lever slowly and allow operating anvil to rest on the steel thickness gauge.
 - 1.5.3.4 Loosen lock screw on dial indicator.
 - 1.5.3.5 Turn the face of the dial indicator to the left or right until the pointer registers the feeler thickness accurately on the face of the dial indicator.

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1.5.3.6 Secure lock screw.

1.5.3.7 Remove feeler gauge.

1.6 CALIBRATION -- T. M. I. Micrometer (Model 549 Motorized)

1.6.1 Activate motorized gauge at least 20 minutes before placing steel feeler gauge in the same thickness range as the sample to be measured between the anvils.

NOTE: It is not harmful to allow the micrometer to run the entire day.

1.6.2 Turn knurl adjusting knob until the scale reading matches the thickness of the feeler gauge.

1.6.3 Remove feeler gauge (the scale pointer should return to "0").

1.7 CALIBRATION Equivalent Thickness Test Instrument.

1.7.1 Calibration shall be in accordance with manufacturers approved calibration procedure.

2.0 PROCEDURE2.0 SAMPLE PREPARATION

2.1.1 The test sample shall consist of a minimum of five (5) unprinted cards/sheets of paper free from wrinkles

2.1.2 Environment for conditioning and testing specimen(s) shall be in accordance with TAPPI T-402: 50 % RH ± 2 % and $73^{\circ} \text{F} \pm 3.5^{\circ} \text{F}$ ($23 \pm 2^{\circ} \text{C}$).

2.1.3 Samples must be conditioned for a minimum of four hours.

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3.0 TEST INSTRUCTIONS

NOTE: Refer to 1.2.1 specification for limits and range requirements.

- 3.1 Insert card stock specimen between the anvils.
- 3.2 Allow operating anvil to come into contact with specimen. Read indicator to the nearest .0001 inch. Note: When using non-motorized micrometer, use care when releasing the operating lever so specimen is not compressed by anvil.
- 3.3 Each of five different specimens of sample shall be measured in two different places. An average of ten readings shall be considered as the thickness of the sample.
- 3.4 Measurements shall not be made on areas of the specimen within less than 1/4 inch from any edge.

4.0 REPORTING

- 4.1 Thickness shall be reported in decimals of an inch to the nearest .001 inch or in points where one point equals .001 inch. Thus, a thickness of .0068 inches may be reported as 6.8 points, etc.
- 4.2 Report the average of ten (10) determinations and the range (difference between the highest and lowest of the 10 determinations).

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CWT6/30/70
DateA
Revision

Change

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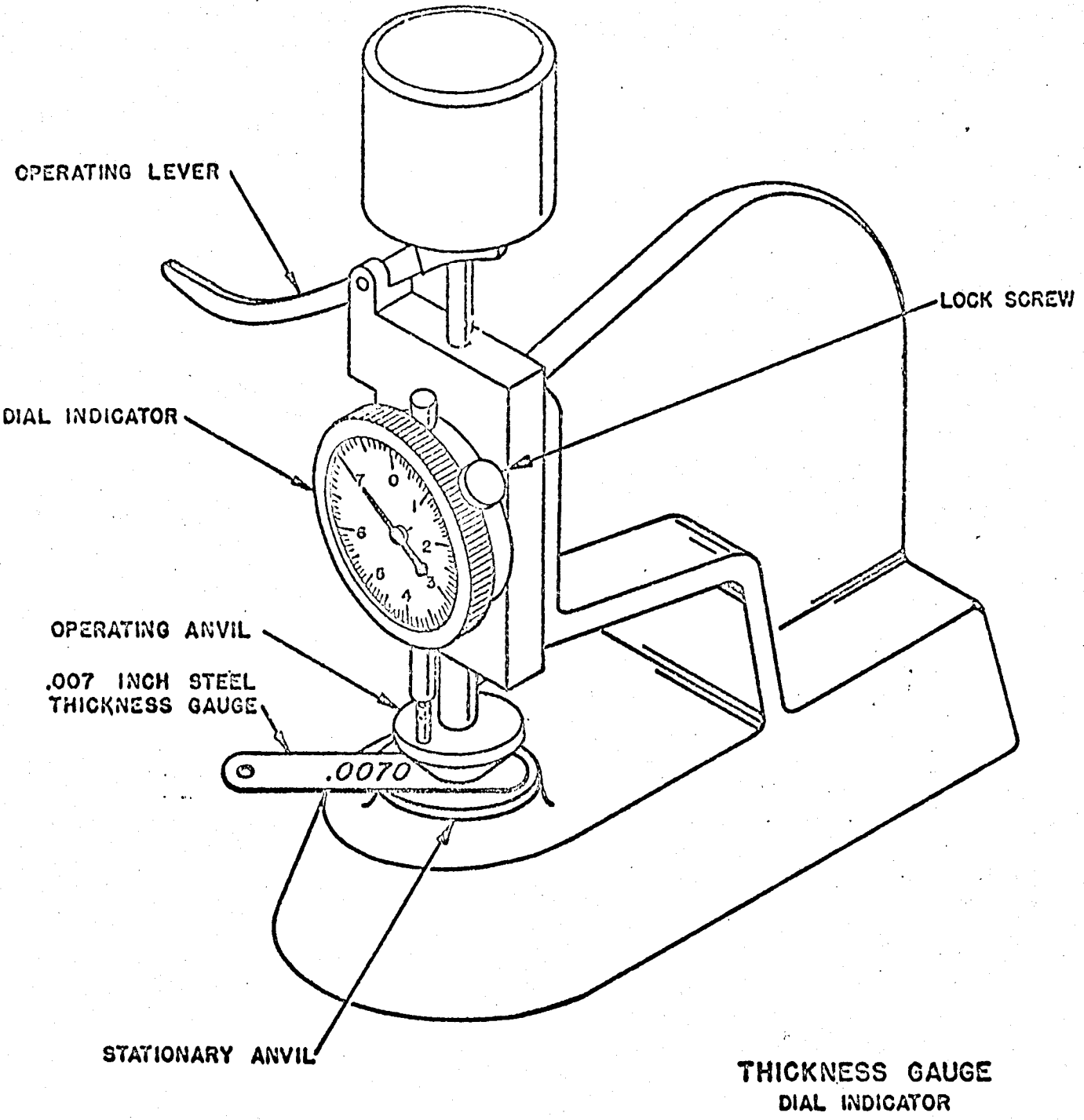


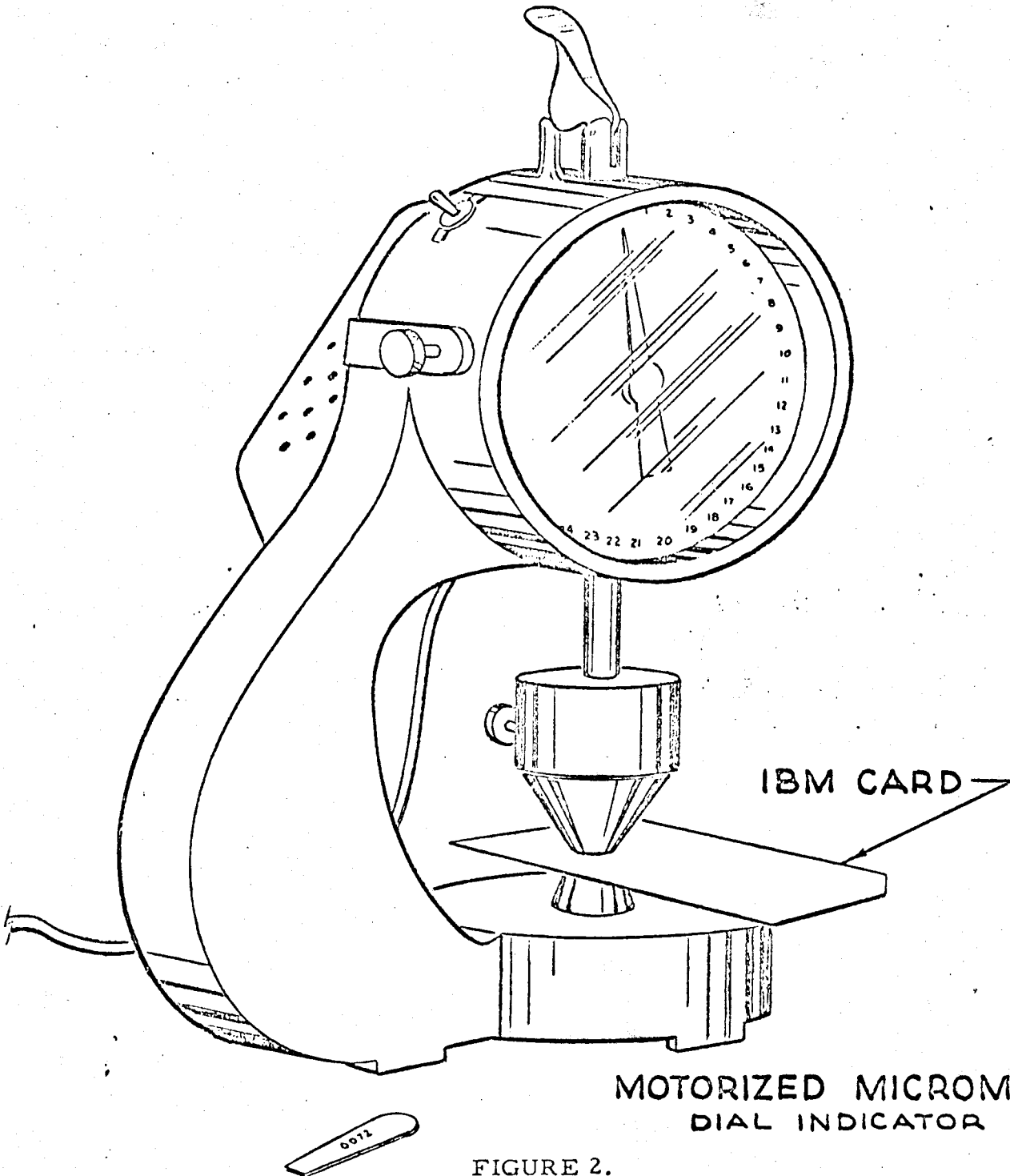
FIGURE 1.

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MOTORIZED MICROMETER
DIAL INDICATOR

FIGURE 2.