MACHINE METHODS OF ACCOUNTING

INTERPRETERS

The increased variety of accounting routines to which the tabulating card principle was adapted included some procedures which necessitated the creation of unit records to which it frequently was necessary to refer directly. Consequently, a demand arose for transferring the data recorded in the form of punched holes into more readable form. To meet this need, machines were developed which print or "interpret" on the card itself the symbols corresponding to the punched data.

These machines gave impetus to the use of the tabulating principle in those accounting routines in which the unit card records were to constitute permanent files to which reference was frequently made (thereby necessitating the "interpretation" of punched reference information), as well as to the preparation of various documentary records such as tabulating card checks. The following illustrations show representative examples of the interpretation of cards for each of these purposes.

Accounts Receivable Subsidiary Ledger Cards

Card Check

The Automatic Interpreter (Type 550)

The Automatic Interpreter (Type 550) is used to translate the holes punched in a tabulating card into printed figures along the top edge of the card. The information to be printed may be placed in any sequence. This is made possible by a plugboard which provides entire flexibility. Forty-five columns of interpreted data constitute the full printing capacity of the machine, but any 45 columns of a card may be selected.

The operation of this machine is very simple, the only requirement on the operator's part being to place the group of cards to be interpreted in the feeding unit, set the plugboard, and press the start button. The machine then automatically interprets at the rate of 75 cards a minute or 4,500 cards an hour.

Automatic interpretation of punched cards is an aid to checking, filing, selection, and reference operations.

Card Feeding

The machine is equipped with a horizontal feed which permits continuous operation when cards are being placed in the feed hopper or removed from the stacker. Cards should be placed in the hopper printed side down with the top edge (12's) entering the machine first.

The feeding hopper has a capacity of 800 cards; and the stacker, in which the interpreted cards are deposited, has a capacity of 1,000 cards.

Plugboard

There are two sets of hubs for the insertion of connection wires on this machine. One set corresponds to the columns of the card (brush positions) and the other set corresponds to the forty-five type bars (printing positions). These two sets of hubs make it possible to record across the top of the card, in any desired sequence, the information recorded in any forty-five columns of the card.
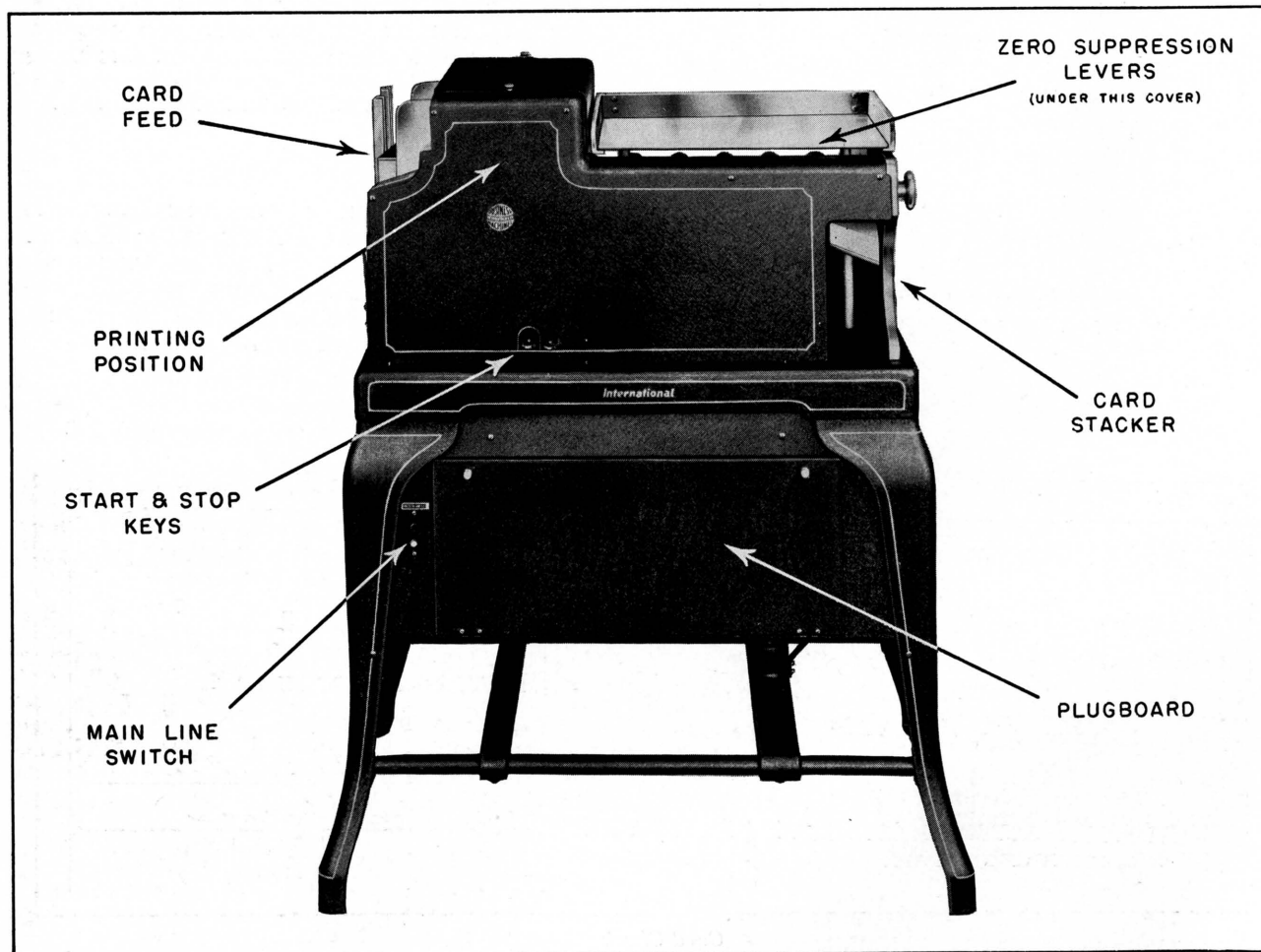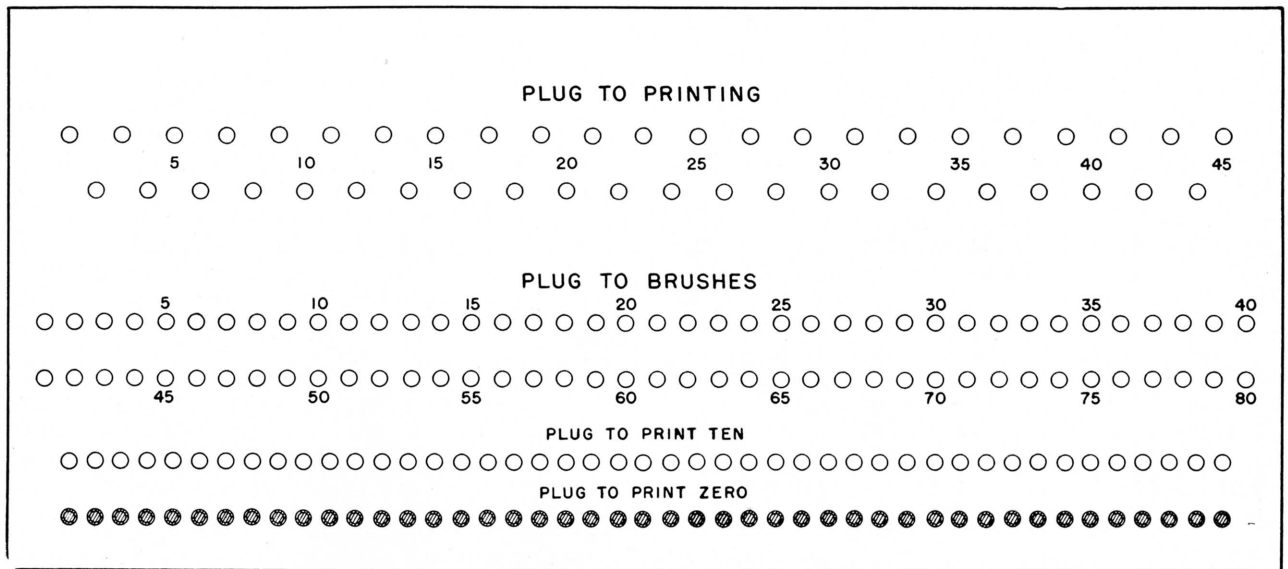
Plugboard of the Automatic Interpreter

At the bottom of the plugboard are two additional rows of hubs which are utilized for printing "10" or "0". These hubs are fitted with a special set of plugs which are normally inserted in the lower hubs (Print Zero) to cause the machine to interpret punched zeros in the normal manner. When any of the plugs are placed in the upper of these two rows of hubs (Print Ten) the machine interprets punched zeros appearing in the corresponding columns as 10's.

When the eleventh and twelfth positions at the top of the card are punched, they can be interpreted only by moving the plug to the Print Ten row of hubs. When double punching, such as "X" and "5", appears the "5" will be interpreted if the plug is set to Print Zero.

When plug wires are inserted to connect certain specified card columns with the desired printing positions, the machine will print not only the figures contained in those columns of the card which have been wired, but also a series of zeros to the right of the number unless controlled otherwise.
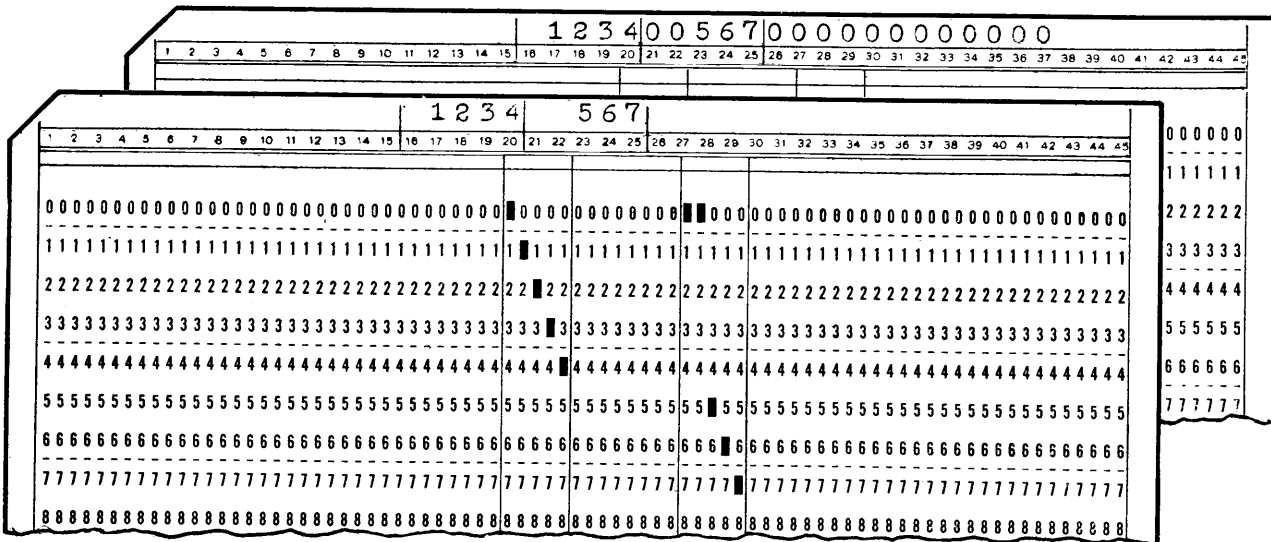
Zero Suppression

The printing unit of the Automatic Interpreter is composed of a single continuous bank of forty-five type bars. Since it is necessary to divide the printing into columnar fields, a device has been provided for preventing the printing of zeros to the right of interpreted amounts.

Next to the feed mechanism and under the glass cover is a series of 45 short levers and a columnar indicating strip corresponding to the
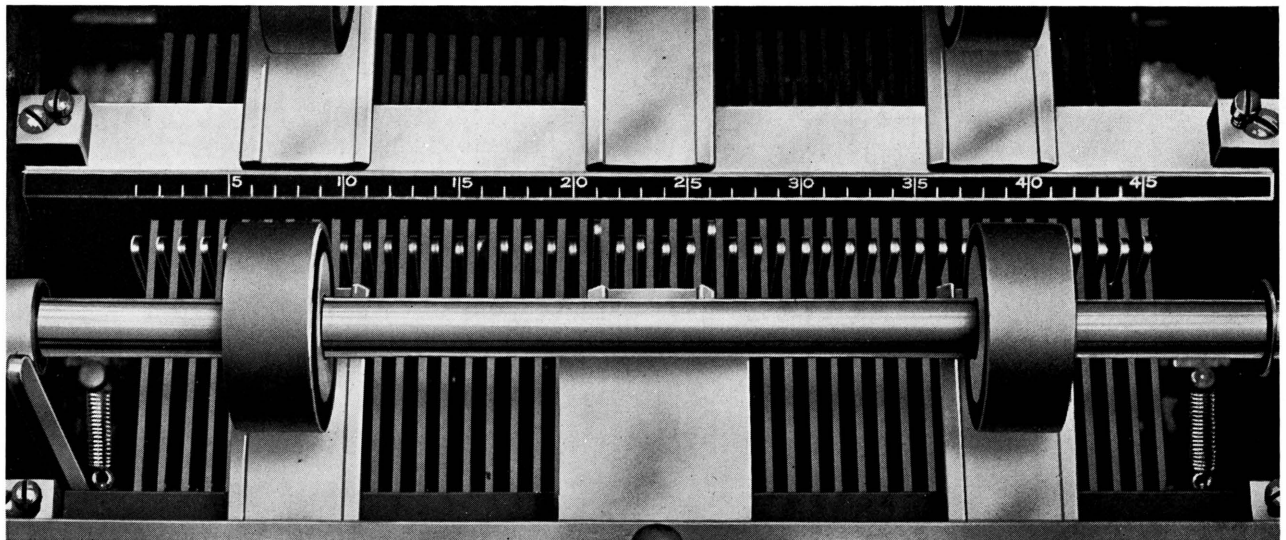
Zero Suppression Levers

Zero Printing and Zero Suppression

forty-five positions. These short levers are normally locked in the position to which they have been set by a mechanism controlled by either of the two long levers situated on the back and front rails.

If it is desired to print in two fields on a card —from position 15 to position 20, and from position 21 to position 25, inclusive—the locking mechanism should be set as follows: Press either of the long levers toward the stacker and then move the short levers in columns 21 and 26 toward the feed mechanism. All the short levers intervening should be away from the feed mechanism. The setting of the 21st lever prevents the printing of zeros immediately preceding any number, having less than five digits, which may be interpreted in the second field.

Likewise, the setting of the 26th lever prevents the printing of zeros after the second field or before any field to its right, which may be interpreted also.

Electrical Zeros

When it is desired to print zeros in a given position, regardless of whether or not a significant digit appears to the left, the printing may be accomplished by substituting a 0 for the 10 type character and placing the plug in the Print Ten hub.

Electrical Energy

The Automatic Interpreter operates on direct current—110 or 220 volts, and consumes 5.0 amperes for starting and 2.5 amperes for running at 110 volts.
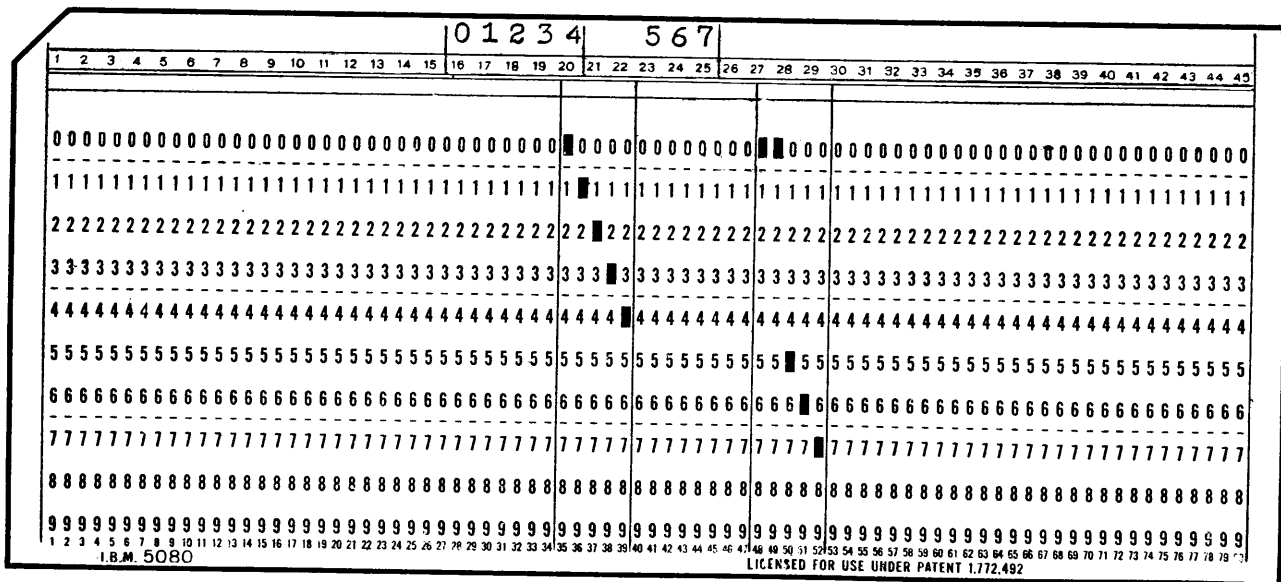
Printing a Zero Electrically.

Automatic Check Writing Interpreter (Type 551)

This machine is particularly designed for the purpose of translating the holes punched in tabulating cards and printing the resulting numerals in any desired arrangement, in legible form, on the face of regular tabulating cards or on tabulating card checks.

The printing can be accomplished in any one of five horizontal positions on the card. The first is at the extreme top of the card, where it is visible for filing and general work, and the lowest position is on a line 1 3/16″ from the top of the card, which is the check-writing position. Between these two are three other equally spaced positions registering exactly between the punched positions.

Special large pin-point type may be used for check writing, giving a clear impression and affording extra protection to the check. Asterisks are automatically printed to cancel any unused positions in the space reserved for dollars, and the amount may be printed in two or more places if desired.

The machine may interpret forty-five card columns simultaneously. A full eighty-column card may be interpreted by using two lines of printing.

At the same time that figures are being interpreted in the check writing position, regular interpreter type may be used to repeat the amount or print some other class of data on the same line in other available printing positions.

Card feeding, plugboard arrangement, zero suppression, and electrical energy requirements are the same as for the Type 550 Automatic Interpreter. The speed, however, is 60 cards a minute.

Printing Position Control

The position on the card in which the printed characters appear may be varied so that the interpreted data will appear in any one of the five horizontal sections shown on the accompanying illustration.

The five positions of the card available for interpretation are the spaces (1) along the top edge of the card as on the Type 550 Interpreter, (2) between the 12 and 11 positions, (3) between the 11 and 0 positions, (4) between the 0 and 1 positions, and (5) between the 1 and 2 positions.

The changing of the line of printing is effected by setting a dial located on the back of the machine. The disc may be adjusted by pulling it out and turning it to the desired position.

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Printing Position Control Dial

In setting the disc, one of the five index numbers (1, 3, 5, 7, 9 — representing the numbers of eighths of an inch from the top of the card at which the center of printing will appear) corresponding to the position of printing desired, should be made to coincide with the etched line on the shaft.

Special Type

The special pin-point type requires a type bar of double the width of the ordinary type bar. This slightly reduces the number of positions available for regular interpreting. The pin-point characters require 10/32 of an inch as compared with 5/32 of an inch for the normal bar. The height of both types of symbols is the same—one-eighth inch.

When the special pin-point type are placed in a machine for check writing purposes, these positions may be advantageously used for the interpretation of those fields which are used frequently for reference or filing. The special type makes these figures stand out from the other information appearing on the cards.

The tenth, eleventh, and twelfth position printing of the special width type bars is the same size as on the normal bar. These characters are printed in the regular type at the right of the double space.

Automatic Asterisks

The machine is arranged so that asterisks print automatically to the left of the last figure in the amount field, thus properly filling the amount space on the face of the check.

Special Devices for Interpreters

A SELECTION OF PRINTING POSITION			B. FIELD SELECTION			C. CLASS ELIMINATION		
NO X	12000 DEBIT AMOUNT	CREDIT AMOUNT	NO X	1100 PRICE		NO X	1000 COST	
	DR. OR CR. AMOUNT			DOMESTIC PRICE	FOREIGN PRICE		COST	
0 0 0 0 0 0 0 0	▮▮▮ 0 0 ▮▮	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	▮▮▮ 0 0 ▮▮	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	▮▮▮ 0 ▮▮▮	0 0 0 0 0 0 0 0
1 1 1 1 1 1 1 1	1 1 1 ▮ 1 1 1 1	1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	1 1 1 ▮ ▮▮ 1 1	1 1 1 1 1 1 1 1	1 1 1 1 1 ▮ 1 1 1 1		1 1 1 1 1 1 1 1
2 2 2 2 2 2 2 2	2 2 2 2 ▮ 2 2 2	2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2	2 2 2 2 2 2 2	2 2 2 2 2 2 2 2
X PUNCHED	DEBIT AMOUNT	2100 CREDIT AMOUNT	X PUNCHED	1200 PRICE		X PUNCHED	COST	
	DR. OR CR. AMOUNT			DOMESTIC PRICE	FOREIGN PRICE		COST	
0 0 0 0 0 0 0 0	▮▮▮ 0 0 ▮▮	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	▮▮▮ 0 0 ▮▮	0 0 0 0 0 0 0 0	▮▮▮ 0 ▮▮▮	0 0 0 0 0 0 0 0
1 1 1 1 1 1 1 1	1 1 1 1 1 ▮ 1 1	1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	1 1 1 1 ▮ 1 1 1	1 1 1 1 1 ▮ 1 1 1 1		1 1 1 1 1 1 1 1
2 2 2 2 2 2 2 2	2 2 2 2 ▮ 2 2 2	2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2	2 2 2 2 ▮ 2 2	2 2 2 2 2 2 2 2	2 2 2 2 2 2 2	2 2 2 2 2 2 2 2

Class Selection

Class Selection Device for Interpreter

The Type 550 Automatic Interpreter and the Type 551 Automatic Check Writing Interpreter can be equipped with a ten-position class selection device which operates in exactly the same manner as the class selection device for tabulating machines. The use of this device is illustrated above.

Automatic "Not Over" Indication

The Check Writing Interpreter may be arranged to print an automatic "not over" indica-tion when definitely specified. This is illus-trated below and consists of special type bars and a special circuit which causes zeros or as-terisks to print behind a fixed $1 symbol in such a manner that the next round number greater than the check amount is always in-dicated.

Type bars reserved for "not over" indication cannot be used on regular interpreting since they have zero type in every position except the asterisk position.

CHECK NUMBER
1771

INTERNATIONAL BUSINESS MACHINES CORPORATION
DATE

CHECK NO.	INDEX NO.	CODE NO.	AMOUNT
0 0 0 0 ▮	0 0 0 ▮	▮▮▮▮▮▮▮▮	0 0 0 0

▮ ▮ ▮ **NOT OVER**

PAY ⁕ ⁕ ⁕ ⁕ ⊜ ⊝ ⁕ DOLLARS ⁕ ⊜ ⊜ ⁕ CENTS $1 0 0 ⁕ ⁕ ⁕

TYPE BARS WORK IN UNISON IN REVERSE SEQUENCE—
ZEROS PRINTED FOR ALL NUMBERS—
ASTERISKS PRINTED FOR ASTERISKS.
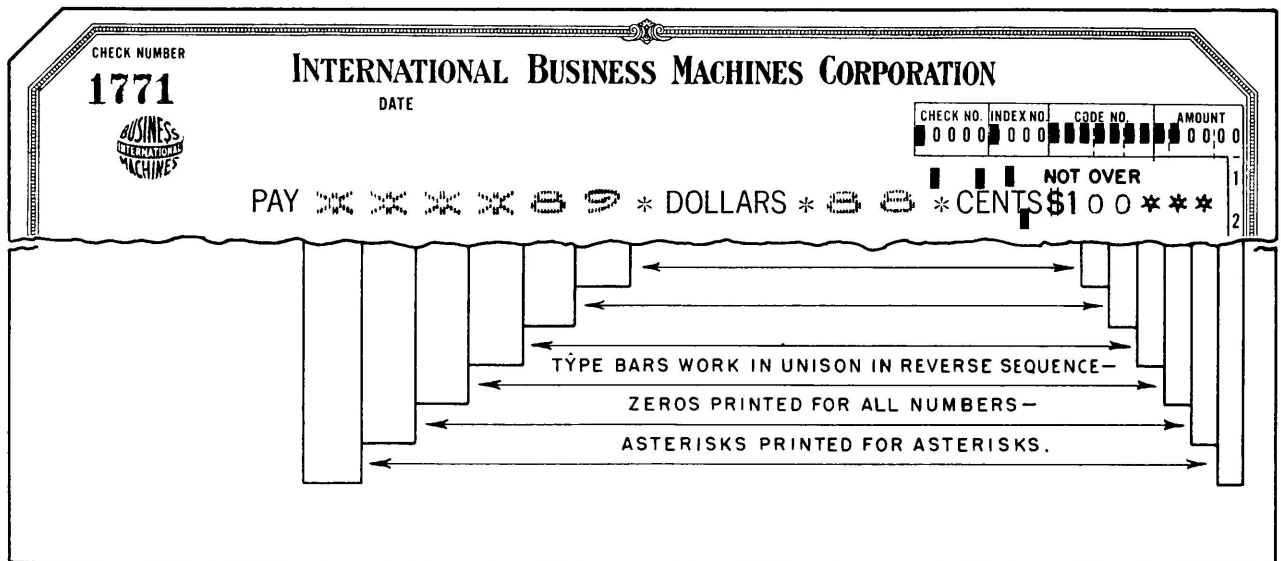
Automatic "Not Over" Indication

10 1 0100	99124389			
10 2 0100		2307475		
10 3 0100	4000000			
20 0 0100		18472149		
20 1 0100		32443920		
20 4 0100	107774			
20 6 0100		4000000		
22 0 0100		59676		
25 0 0100		3103824		
25 1 0100	4013777			
25 2 0100		4308713		
25 3 0100		2393200		
25 4 0100		806870		

1003 President's Office   1003 4100

		96301		28870
		3615	3287	75000
		119948	11574	171491
		323224		336289
			19441	281100
	17721		172400	278400
				525574
				52500

1004 Dean of Women

1004 1100	31763		694500
1004 2100	7092		29069
1004 3100	678		

1005 Registrar's Office

1005 1100	165763		264469
1005 2100	75364	88134	431157

1006 Board of Regents

1006 2100	21319	999999080	150000

1100 Field Secretary and Alumni Association

1100 1100		44216		809700
1100 2100	6198			37508
1100 4100	3076		825	77014

1101 Editor's Office

1101 1100	81900		351600
1101 2100	7118	1000	8500

1102 General and Chemical Storehouse

1102 1100		134219		799614
1102 2100	90248		6865	75675
1102 4100	312063			12346
1102 5100		37341		

1103 Employment Bureau

1103 1100	16655		399176
1103 2100	1227	514	7500

1103 - 3100   Income

1104 Housing Bureau

1104 1100	36110		240300
1104 2100	6696	500	13200

1105 Inter-Campus Trolley

1105 1100	79255		118000
1105 2100	1235231	343423	528687
1105 3100	223051		650000

1106 Inventory and Service

1106 1100	23432		539500
1106 2100	11306	·10400	30000

1107 Library

1107 1100		575527		844749
1107 2100		27156	123340	332758
1107 3100	25870			163578
1107 4100		417260	2241832	506070
1107 5100		35827		2800000

File of Interpreted Cards Used For Budgetary Control