

Correspondence: Executive Officer  
P.O. Box 282 NORTH RYDE  
N.S.W. 2113  
Telegrams: NATSTANCOM SYDNEY  
Telephone: 888 3922

CERTIFICATE OF APPROVAL No 6/4D/23  
VARIATION No 1

CANCELLED

0

This is to certify that the following modification of the patterns of the  
Avery 1701 Weighing Instrument

approved in Certificate No 6/4D/23 dated 31 May 1972

submitted by Avery Australia Ltd,  
3-5 Birmingham Avenue,  
Villawood, New South Wales. 2163,

has been approved under the Weights and Measures (Patterns of Instruments)  
Regulations as being suitable for use for trade.

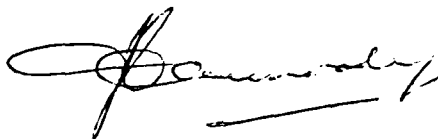
Date of Approval: 1 August 1975

The approved modification, described in Technical Schedule No 6/4D/23 - Variation  
No 1, and in drawings and specifications lodged with the Commission, provides for a  
capacity of 6,39 kg by 0,01-kg weight increments with unit price in 1-c increments  
to \$7,99/kg.

The approval is subject to review on or after 1 January 1976.

All instruments conforming to this approval shall be marked with the approval  
number "NSC No 6/4D/23".

Signed



Executive Officer

Bull 8



Weights and Measures  
(National Standards)  
Act 1960-1966

Weights and Measures  
(Patterns of Instruments)  
Regulations

**CANCELLED**  
COMMONWEALTH OF AUSTRALIA

Cert. No.

**NATIONAL STANDARDS COMMISSION**

## *Certificate of Approval*

**CERTIFICATE NUMBER 6/4D/23**

This Certificate replaces Certificate No 6/4D/23 dated 12th May 1972. \*

In respect of the pattern of

Avery Self-indicating Price-computing Ticket-printing Weighing Instrument of 9 lb 15 $\frac{3}{4}$  oz Capacity and Variant.

Submitted and  
manufactured by: W. & T. Avery (Aust.) Pty. Ltd.,  
3-5 Birmingham Avenue,  
Villawood,  
New South Wales. 2163.

This is to certify that the pattern and variant of the instrument illustrated and described in this Certificate have been examined by the National Standards Commission under the provisions of the abovementioned Regulations and have been approved as being suitable for use for trade.

The pattern and variant were approved on 10th February 1971 for a limited duration expiring on 10th February 1972, in respect of a limited number of instruments; on 4th May 1972 approval was granted without these limitations.

---

\* NOTE: Pages 3 and 4 dated 12th May 1972, and pages 5 to 7 and Figures 6/4D/23 - 1 to 9 dated 18th February 1971 of the previous issue form part of the Certificate and must be retained.

Approval was granted on condition that:

1. all instruments conforming to this Certificate:
  - (a) are appropriately marked NSC No 6/4D/23; and
  - (b) comply with the General Specifications for Measuring Instruments to be Used for Trade;
2. the instruments are subject to a service period of six months;
3. the instruments are tested in accordance with the test procedure described in this Certificate.

This Certificate comprises:

Pages 1 and 2 dated 31st May 1972.  
Pages 3 and 4 dated 12th May 1972.  
Pages 5 to 7 dated 18th February 1971.  
Figures 6/4D/23 - 1 to 9 dated 18th February 1971.

Date of issue 31st May 1972.

Signed



A person authorized by the Commission  
to sign Certificates under the  
abovementioned Regulations.

---

DESCRIPTION OF PATTERN

The pattern (see Figure 1) is of a self-indicating, price-computing, ticket-printing weighing instrument of 9 lb 15 $\frac{3}{4}$  oz capacity by  $\frac{1}{4}$ -oz graduations, known as an Avery 1701.

The pattern computes prices in relation to the weight indicated up to a unit price of 199 c/lb; it prints a heat-seal ticket for attachment to a package.

The pattern is composed of the following major units (see Figures 2 and 3):

1. The control panel, on which are mounted mains switches, reset button, indicator lamps, the unit-price selectors, and digital weight indicators.
2. The weighing mechanism and digital encoder:
  - (a) The lever system has a second-order main lever (see Figure 3) with the load receptor and bracket supported on the main load bearings and maintained in a horizontal position by a stiffened flexible stay. All bearings are of the cageless ball type. Damping of the lever system is provided by an oil dashpot.

The temperature-stable spring resistant is coupled to an extension of the main lever and is fixed above the lever to an adjustable anchor point which provides the means for taring the pattern. Adjustment of tare is by means of a spring-loaded knob, which must be pushed in before turning, mounted at the side of the cabinet.

Zero is adjusted by means of two balance boxes located in the load-receptor support bracket and accessible after removing the load receptor. An analogue zero indication is provided in the form of a shadow pointer (see Figure 4), which has a zero graduation and one  $\frac{1}{4}$ -oz graduation on either side of the zero.

## (b) Digital encoder:

The indicator system for the instrument is electronic and the conversion from the lever motion to digital electrical signals is carried out by a self-contained pre-adjusted shaft-rotation type encoder using a glass disc marked with a binary code as the encoding element. The shaft of the encoder is coupled to the lever system through a pinion and a rack pivoted on a shock-absorbing device mounted at the end of the main lever extension. Further damping of the system is provided by a magnetic damper on the encoder shaft.

A series of photo-electric cells read the encoded weight data from the disc through a narrow radial slit (see Figure 5).

3. The encoder pre-amplifiers amplify the photo-electric cell output signals and define the limiting levels of 0 and 1 in the binary code.
4. The trigger unit and motion detector signals the beginning of a new weighing cycle and inhibits the computing and printing cycle until the weighing mechanism is in equilibrium between the zero and full-load limits of the instrument.
5. The code-conversion unit, in which the cyclic binary code of the encoder unit is converted to Binary Coded Decimal (BCD) form.
6. The weight-indicating unit translates the BCD weight information into the required form for positioning the optical indicators.
7. The optical indicators display the weight information in numerical form on the instrument control panel. The indicators, which are of the moving-coil type, have their light sources connected in series so that failure of a lamp results in a complete blackout of the indicator system.
8. The weight counter and coincidence unit tests the number of  $\frac{1}{4}$ -oz units in the total weight to determine the number of groups of pulses to be counted in the price computation.

9. The unit-price pulse generator unit provides each  $\frac{1}{4}$  oz group of pulses with one pulse for each cent in the selected unit price, which is set by knobs on the control panel.
10. The price counter counts the total number of pulses generated by the unit-price pulse generator in the number of groups determined by the weight counter. Sixty-four pulses would be counted for 1 lb at 1 c/lb.
11. The power amplifiers accept information from the weight-indicator unit and the price counter, which is matched with the printer commutators to drive the print-locking solenoids at the appropriate point of the print-setting cycle.
12. The sequence unit synchronises the various functions of the pattern and controls interlocking and resetting of the pattern at the end of the weighing and printing process.
13. The stabilised power supply provides regulated voltages for all computing logic circuits, which are built up on plug-in printed circuit boards (see Figure 6).
14. The printer (see Figure 7) is powered by a continuously running motor through an electrically operated clutch mechanism. The print is set by a group of combination commutator/type wheels which are locked in position by solenoid-operated pawls when digital correspondence is established between the commutator signal and the electronically stored weighing and price data.

Figure 8 shows the method of attachment of the nylon-ribbon dust sleeve which protects the commutator.

Pregummed printed tickets (see Figure 9) are fed through the printer under the control of a brake actuated by a photo-electric cell which senses a small rectangular hole to synchronise the position of each label with the type blocks. After printing, the ticket is guillotined from the roll and heated to prepare the gummed surface for use.

### Operating Procedure

After switching on the mains and printer switches, the reset button should be depressed to clear the data store. The unit-price switches are set to any desired value between 0 and 199 c/lb and the tare adjustment is set, using the analogue zero indicator. The digital indicator will also indicate 0 lb 0 oz. When a package is placed on the scale, the printer prints a ticket after the weight indication has come to rest and the green "weighing complete" indicator lights up. A second ticket may be printed by depressing the reset button if required; otherwise the removal and replacement of the package will reset the instrument and the cycle will be repeated.

The printed ticket (see Figure 9) has the unit price, the weight, the price, a selected letter code, and a name panel printed on it.

### DESCRIPTION OF VARIANT

1. With other price ranges up to \$3.99 per pound, in which case the pattern will have three price-setting switches, 0-9 cents by 1 cent increments, 0-90 cents by 10 cent increments, and 0-3 dollars by 1 dollar increments.

### GENERAL NOTES

#### Test Procedure

The following test procedure is necessary for checking all the functions of the electronic circuitry without the need to check every possible weight and price combination:

1. To check the weight indication, weight computation and printout:
  - (a) Set unit-price selector to 64 c/lb;
  - (b) Place 1 oz on the plate and print out. Add  $\frac{1}{4}$  oz,  $\frac{1}{2}$  oz,  $\frac{3}{4}$  oz, 2 oz to 15 oz by 1 oz increments, and 1 lb to 9 lb by 1 lb increments, printing a ticket at each increment.

18/2/71

2. To check computer:

Weigh 9 lb  $15\frac{3}{4}$  oz with the unit-price selector set to 199 c/lb and print a ticket (total price \$19. 87).

3. To check unit-price selectors and price printouts:

(a) Place 1 lb on the scale;

(b) Set 1 cent to 9 cents by 1 cent increments on the unit-price selectors and print out after each increment;

(c) Set 19 cents to 199 cents by 10 cent increments on the unit-price selectors and print out after each increment.

4. The commutators of the pattern may be checked by weighing 3 lb  $3\frac{3}{4}$  oz at a unit price of \$1.03 per pound, which should give a total price of \$3.33. If several hundred tickets can be printed without error the commutator may be assumed to be in fair condition. Errors may appear as wrong digits or digits replaced by inverted alpha characters.





# NATIONAL STANDARDS COMMISSION

## TECHNICAL SCHEDULE No 6/4D/23

### VARIATION No 1

Pattern: Avery 1701 Weighing Instrument

Submitter: Avery Australia Ltd,  
3-5 Birmingham Avenue,  
Villawood, New South Wales, 2163.

Date of Approval of Variation: 1 August 1975

The modification described in this Schedule applies to the patterns described in Certificate No 6/4D/23 dated 31 May 1972.

All instruments conforming to this approval shall be marked "NSC No 6/4D/23".

#### Description:

The modification provides for the instrument of capacity 6,39 kg by 0,01-kg weight increments with unit price in 1-c increments to \$7,99/kg. A sample ticket is illustrated in Figure 10.

#### Special Tests:

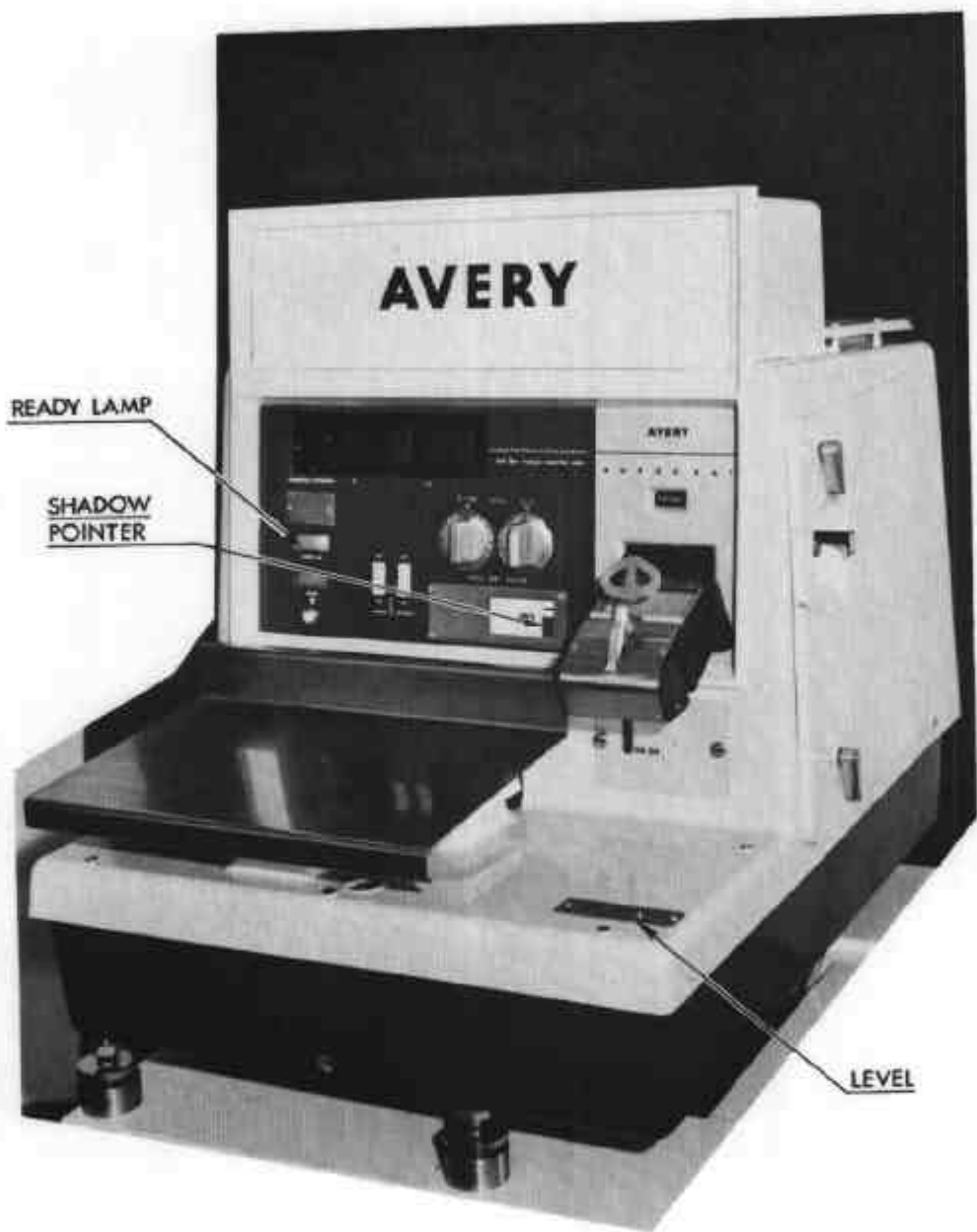
Price-computing and Weight Circuits: The indication of weight, unit price and total price as listed in Table 1 will indicate that the price-computing and weight circuits are functioning correctly. The exact figures should be indicated as rounding is effected within the computer.

11/8/75

TABLE 1

Indicated Weight kg	Price per kg \$	Total Price \$
0,00	0,00	0,00
0,01	7,99	0,08
0,02	7,98	0,16
0,03	7,87	0,24
0,04	7,77	0,31
0,05	7,60	0,38
0,06	7,55	0,45
0,07	7,46	0,52
0,08	7,34	0,59
0,09	7,27	0,65
0,10	7,12	0,71
0,20	7,01	1,40
0,30	6,99	2,10
0,40	5,98	2,39
0,50	4,86	2,43
0,60	3,75	2,25
0,70	2,60	1,82
0,80	1,50	1,20
0,90	0,99	0,89
1,00	7,90	7,90
1,50	7,80	11,70
2,00	7,49	14,98
2,50	7,70	19,25
3,00	7,99	23,97
3,50	7,98	27,93
4,00	7,98	31,92
4,50	7,98	35,91
5,00	7,76	38,80
5,50	7,96	43,78
6,00	7,79	46,74
6,30	7,99	50,34
6,39	7,99	51,06

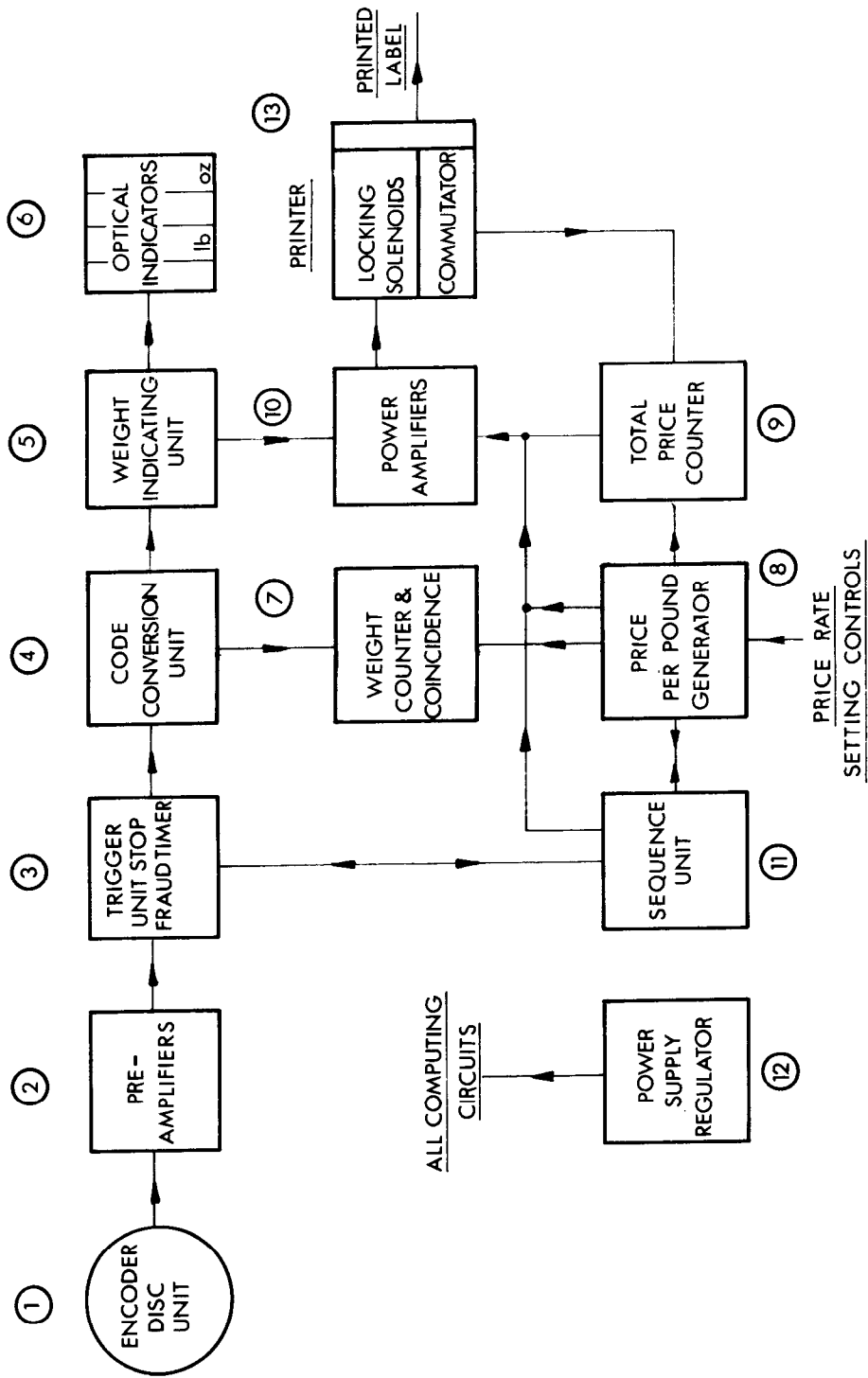
FIGURE 6/4D/23 - 1



Avery 1701

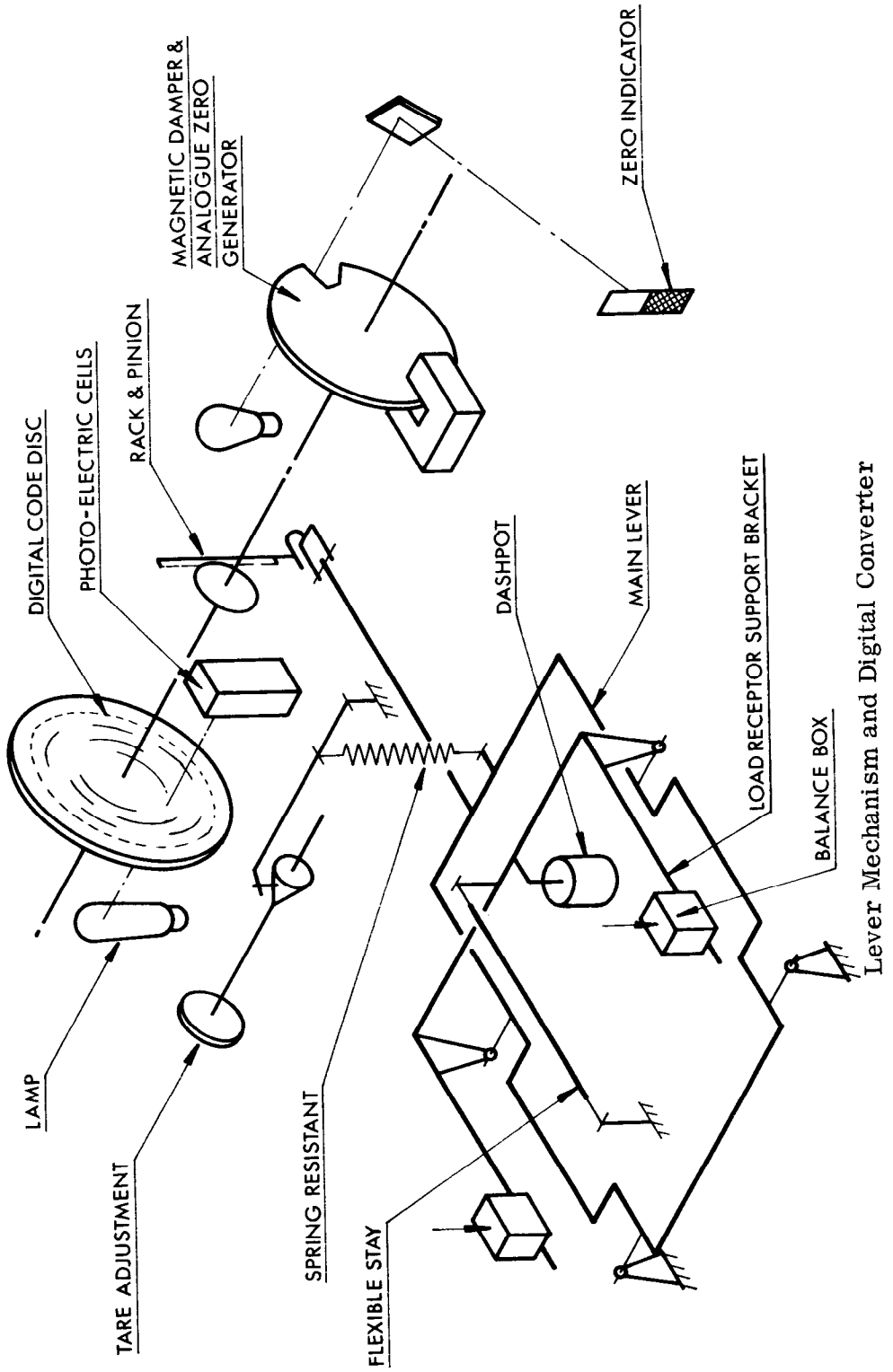
18/2/71

FIGURE 6/4D/23 - 2



Avery 1701 Simplified Block Schematic Diagram

FIGURE 6/4D/23 - 3



Lever Mechanism and Digital Converter

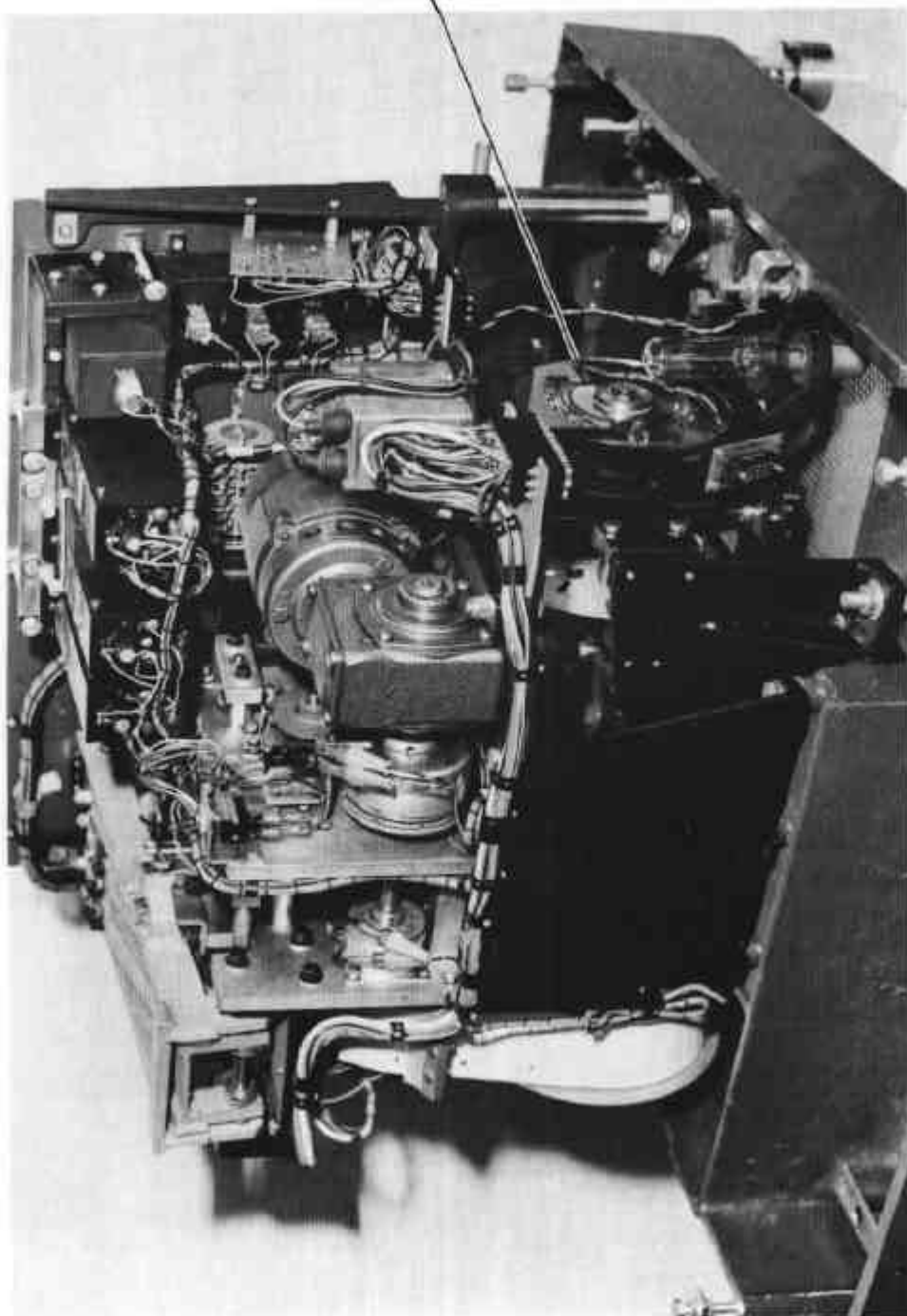
FIGURE 6/4D/23 - 4



Control Panel

18/2/71

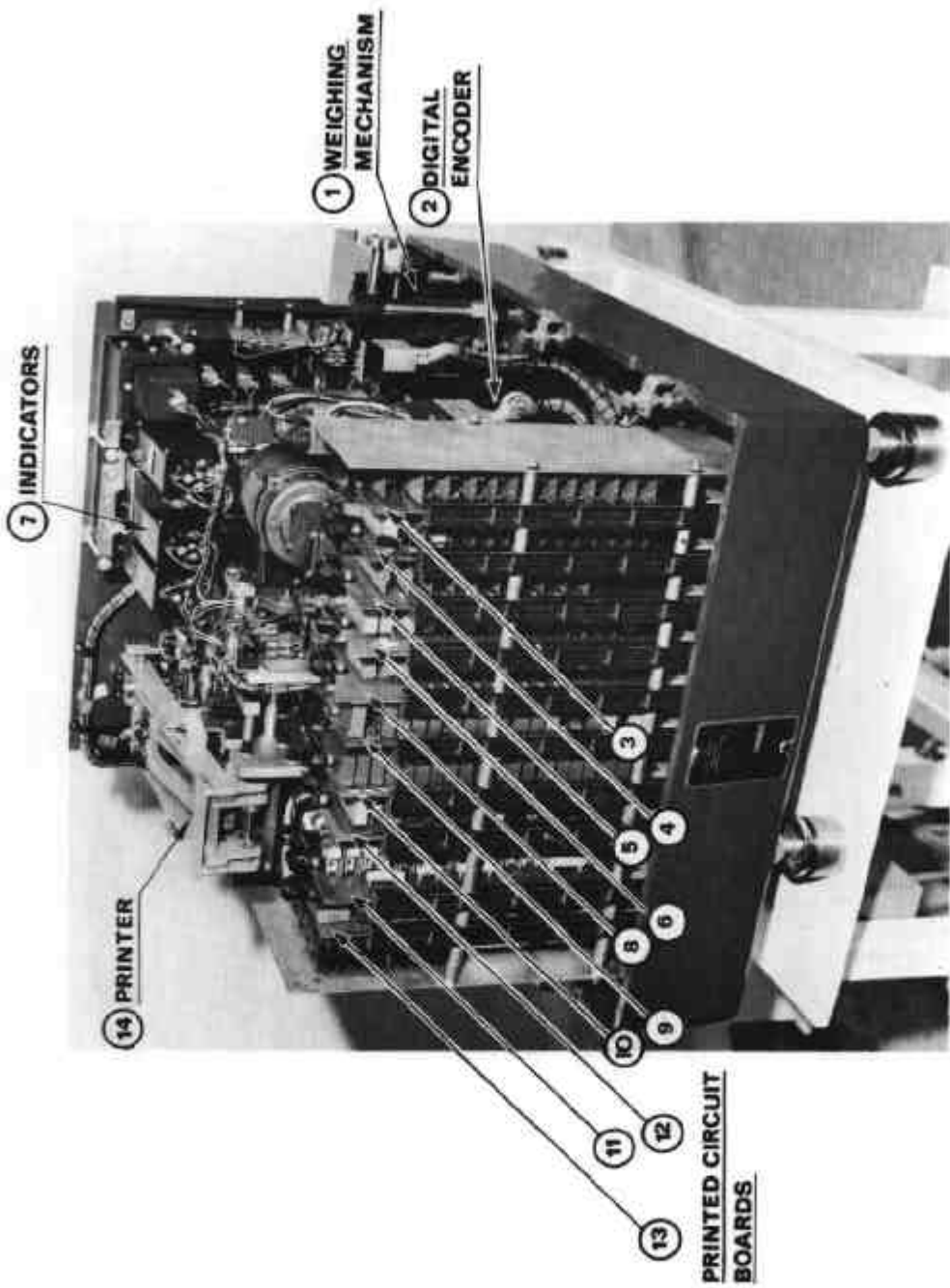
FIGURE 6/4D/23 - 5



Encoder Unit

18/2/71

FIGURE 6/4D/23 - 6

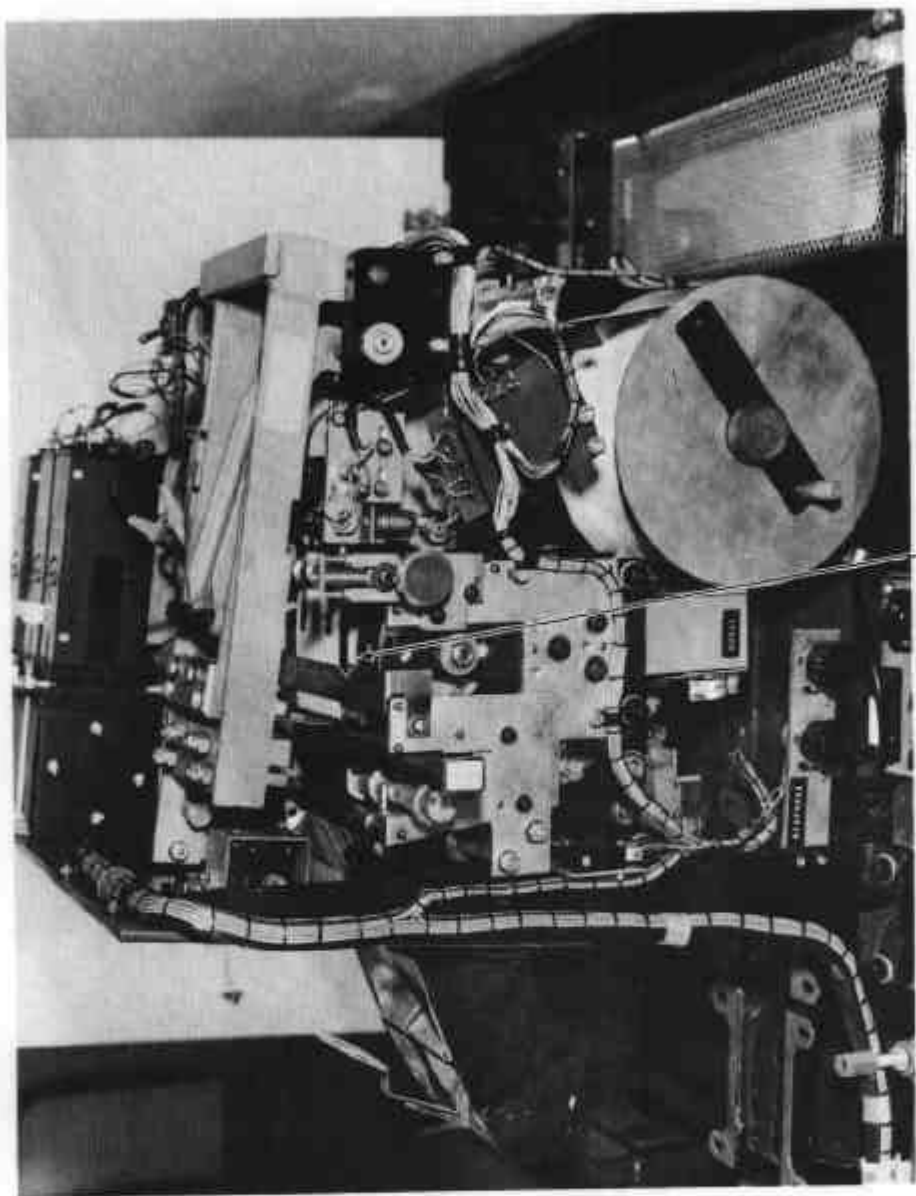


Avery 1701 - Rear View, Cover Removed

18/2/71



FIGURE 6/4D/23 - 7

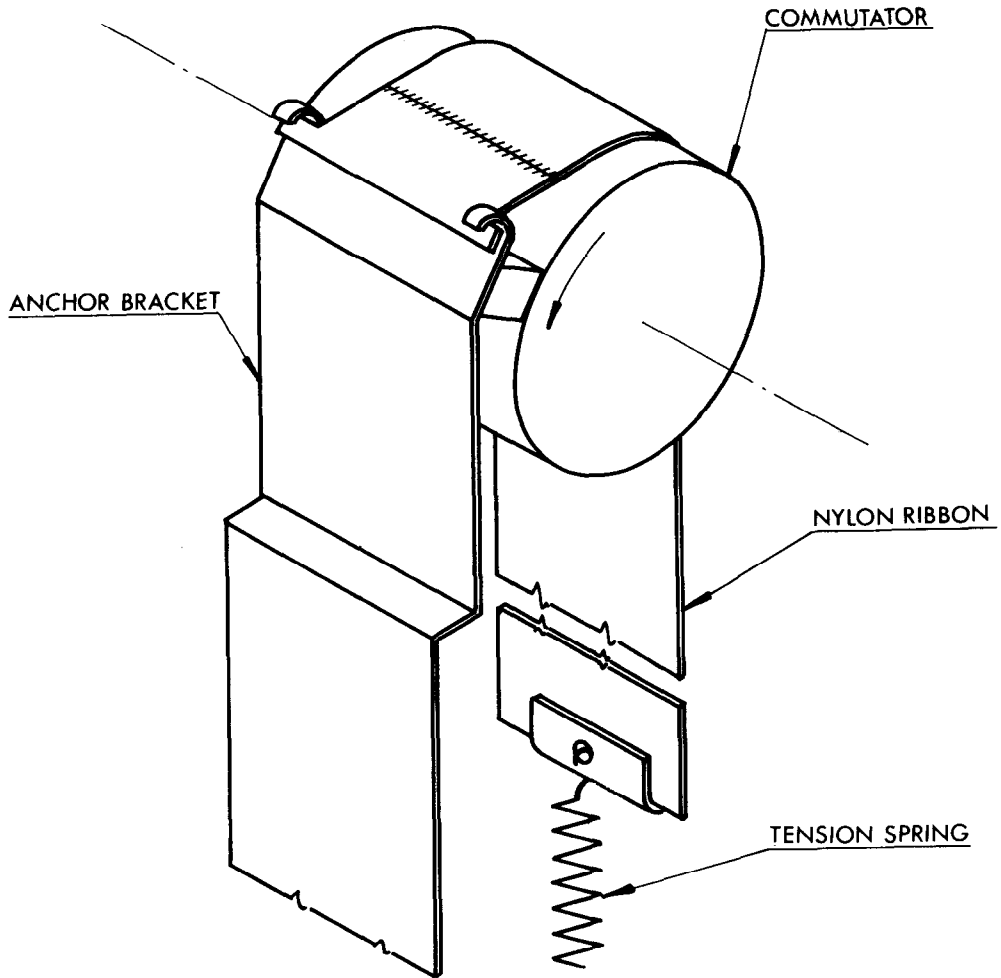


COMMUTATOR DUST SLEEVE

Printer

18/2/71

FIGURE 6/4D/23 - 8



Dust Excluder

18/2/71

FIGURE 6/4D/23 - 9

PRICE PER LB [ ] DOLLARS	AVERY PREPACKAGING SCALE	[ ] [ ]
NET LB OZ [ ]	TOTAL PRICE \$ [ ]	

(a) BEFORE PRINTING

PRICE PER LB 0.64 DOLLARS	AVERY PREPACKAGING SCALE	[BB] [ ]
WENSLEYDALE		
NET LB OZ 9 0	TOTAL PRICE \$ 5.76	

(b) AFTER PRINTING

Ticket (actual size)

18/2/71

FIGURE 6/4D/23 - 10

PRICE/kg	DATE OF PACKAGE
<input type="text"/>	<input type="text"/>
DOLLARS	<input type="text"/>
NET kg	TOTAL PRICE
<input type="text"/>	\$ <input type="text"/>

Product Information



(a) Before printing

PRICE/kg	DATE OF PACKAGE
1.00	1 8 75
DOLLARS	<input type="text"/>
NET kg	TOTAL PRICE
2.25	\$ 2.25

Product Information



(b) After printing

Sample Ticket (actual size)

11/8/75