COMMONWEALTH OF AUSTRALIA

NATIONAL STANDARDS COMMISSION

Weights and Measures (National Standards) Act 1960-1966

Weights and Measures (Patterns of Instruments) Regulations

Certificate of Approval

CERTIFICATE NUMBER 6/10B/16

In respect of the pattern of

Hawke Self-indicating Weighing Instrument of 100-tons Capacity and Variants.

Submitted and manufactured by: Hawke & Co. Pty. Ltd.,
South Terrace,
Kapunda,
South Australia. 5373.

This is to certify that the pattern and variants 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 variants were approved on 13th June 1972.

Approval was granted on condition that:

1. all instruments conforming to this Certificate:

   (a) are appropriately marked NSC No 6/10B/16 and, where required by State legislation, with the State approval number also; and

   (b) comply with the General Specifications for Measuring Instruments to be Used for Trade in respect of that

Cont'd over

part of the instrument which was not previously approved by a State;

2. only one instrument, Serial No 12482, fitted with the Ashworth ticket printer described in Component No 6, located at Commonwealth Railways Siding, Port Pirie, South Australia, is submitted to State or Territorial Weights and Measures Authorities for verification;

3. the instrument referred to in Condition 2 is tested in accordance with the test procedure described in this Certificate.

This Certificate comprises:

Pages 1 to 7 dated 19th June 1972.
Figures 6/10B/16 - 1 to 16 dated 19th June 1972.

Pursuant to regulation 12 of the abovementioned Regulations, this Certificate is applicable in all States in respect of instruments fitted with Component No 3.

Date of issue 19th June 1972.

Signed

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

19/6/72

DESCRIPTION OF PATTERN

The pattern is of a self-indicating weighing instrument of 100-tons capacity, known as a Hawke Combination Weighbridge, and is fitted with an Ashworth ticket printer (see Figure 2). The two baseworks each have a capacity of 75 tons and may be coupled to the headwork either independently or together. The dial is graduated to 20 tons by 1-cwt graduations and the ticket printer prints in increments of 1 cwt.

Five unit weights, each increasing the range by 20 tons, are fitted.

The instrument comprises the components tabulated in Column 5 of Figure 1.

DESCRIPTION OF VARIANTS

The components tabulated in Columns 6 and 7 of Figure 1 make up variants of the pattern with capacities up to the capacities of the baseworks described in Components Nos 1, 2 and 3.

DESCRIPTION OF COMPONENTS

1. Two 3-lever baseworks (see Figure 3) — the basework is described in Certificate No 6/10A/4. The transfer lever of each basework is coupled to the headwork pullrods through additional transfer levers. The maximum capacity is given in Certificate No 6/10A/4.

2. Two tubular-lever baseworks (see Figure 4) — the basework is described in Certificate No 6/10A/4. An additional long arm is welded to the tubular cross-member of each of the inside levers of the two baseworks; these are coupled to two first-order transfer levers which are in turn coupled to the headwork pullrods. The maximum capacity is given in Certificate No 6/10A/4.

3. Two baseworks of a State-approved pattern* or a Commission-approved pattern.

4. Additional transfer levers — additional transfer levers may be fitted between each basework and the headwork, provided the headwork is located in a reasonable position in relation to the

* Pursuant to regulation 12.

baseworks and the levers are fully protected.

5. Ashworth self-indicating combination headwork cabinet (see Figures 5, 6 and 7) — each pullrod from the two basework transfer levers is coupled to a balancing lever fitted with a zero adjustment accessible through a shutter-covered opening at the end of the cabinet extension.

Each balancing lever is coupled to a common intermediate lever through an adjustable vertical link. The intermediate lever is coupled to the main headwork lever, which is fitted with a zero adjustment, manually operated unit weights and a dashpot, as described in Certificate No 6/10A/4. The main headwork lever is also fitted with a double-cantilevered knife-edge on which two weights can be deposited. Each weight is raised and lowered by a sliding mechanism operated through a wire cable and pulley system by one of the basework control levers.

When a control lever is moved to the engaged position, the corresponding balancing lever is released so that the basework lever system is positively connected to the main headwork lever and resistant mechanism. Also the corresponding compensating weight is removed from the main headwork lever.

When the control lever is locked, the balancing lever is disengaged from the main headwork lever and the corresponding compensating weight is added to replace the positive force on the resistant mechanism produced by the basework at zero load.

The following "Instructions for Balancing" are located on the front of the cabinet:

> "With both platforms locked adjust indicator to zero through left-hand side of upper cabinet. Independently balance each platform in turn through adjustment on each balance lever until indicator is at zero.
>
> Balance lever adjustment is on left-hand end of lower cabinet."

6. Ashworth ticket printer (see Figures 8, 9, 10, 11 and 16) — the serrated print discs are mounted on a separate shaft but in line

with the dial indicator spindle and are driven by the spindle through spring-loaded arms. The printer is driven by an electric motor which moves a set of horizontal bars. As each bar moves forward it moves a finger against the corresponding print disc until contact is made in the appropriate step for the weight indicated. A locking plate makes contact first and locks the discs in position. When each finger contacts its disc, the horizontal bar rides up an inclined ramp until a serrated portion of the bar contacts a fixed blade and the bar is held in this position. Each bar also drives a print wheel at the opposite end and the position at which the bar is stopped determines the value set on the print wheel. A hammer operated by the print motor then stamps the set weight value on to the ticket (see Figure 16).

The print wheel, which prints a digit determined by the position of both the indicator and the unit-weight selector, is positioned by a stepped index finger which is moved sideways by a system of levers and cams from the unit-weight mechanism. Hence different steps of the finger will contact the print disc, depending on which unit weight is selected.

The print motor drives a lever by a cam which includes a microswitch. If the lever hits a stop on one print disc which corresponds to the blank space on the dial, the switch is opened and stops the motor. The printer will not print, therefore, when the indicator is in the blank space on the dial.

The print motor is also controlled by a set of contacts and a blade attached to a piston within the dashpot, which is attached to the resistant mechanism (see Figure 11). While the indicator is moving, one or the other of the contacts is closed and prevents the motor starting. A fixed and a variable time delay, which is sealed, prevent the motor starting while the blade is moving between the contacts and when the indicator movement is too small for the contacts to close. The minimum delay is 4 to 5 seconds. The motor is started by a manual "print" button and stopped by a cam-operated switch which opens when the motor has completed the print cycle.

7. Resistant mechanism with single dial (see Figure 2) — as described in Certificate No 6/10A/4.

8. Resistant mechanism as described in Component No 7, with

two dials.

9. Tare bars — as described in Certificate No 6/10A/4.

10. Locking handle — as described in Certificate No 6/10A/4.

11. Intermediate cabinet levers — as described in Certificate No 6/10A/4.

12. Non-self-indicating combination headwork (see Figures 12, 13, 14 and 15) — each pullrod from the two basework transfer levers is coupled to a balancing lever fitted with a zero adjustment accessible through a shutter-covered opening at the end of the cabinet.

    Each balancing lever is coupled to a common intermediate lever through an adjustable vertical link. The intermediate lever is coupled to the steelyard described in Certificate No 6/10A/4 by a pullrod to which can be attached two compensating weights. Each weight is raised and lowered by a lever operated through a wire cable and pulley system by one of the basework control levers.

    The operation is similar to that described in Component No 5.

    The following "Instructions for Balancing" are located on the cabinet:

    "1. First balance the steelyard with both units in lock position.

    2. With steelyard in balance place each unit in weigh position independently and balance by adjusting the corresponding balancing screw through holes in right-hand end of cabinet."

GENERAL NOTES

Test Procedure for Ashworth Ticket Printer

1. Check the setting of the print discs by applying test weights to the load receptor in accordance with the "Test Procedure for Weighing Instruments with Digital Indicators" given in Appendix

10 of the General Specifications.

2. Check the motion detector by applying a load to the load receptor so that the indicator is well away from zero but less than one quarter of the dial capacity and leave this weight on during the following tests:

   (a) Deflect the indicator approximately five graduations by moving the main headwork lever and time the delay between releasing the indicator and when it becomes stationary.

   (b) With the indicator stationary, press the print button and time the delay before the print motor starts. The time should be equal to or greater than the time recorded in test 2 — if not, adjust the time delay control on the motion detector.

   (c) Deflect the indicator at least ten graduations. At the same time as releasing the indicator, press the print button. The printer should not print until the indicator is stationary.

   (d) Repeat test (c) at least ten times. The printer should not print unless the indicator is stationary.

If all tests are satisfactory, seal the adjustable time delay on the motion detector.

FIGURE 6/10B/16 - 1

1	2	3	4	5	6	7
	COMPONENT	DATE APPROVED	FOOT-NOTES	PATTERN	VARIANTS	
					1	2
	BASEWORKS					
1	Two 3-lever baseworks (Figure 3)	13 JUN 72		*	A	A
2	Two tubular-lever baseworks (Figure 4)	13 JUN 72			A	A
3	Two other Commission or State-approved baseworks	13 JUN 72			A	A
	BASEWORK COMPONENTS					
4	Additional transfer levers	13 JUN 72			‡	‡
	HEADWORK COMPONENTS					
5	Ashworth self-indicating combination headwork cabinet (Figures 5, 6 & 7)	13 JUN 72		*	*	
6	Ashworth ticket printer (Figures 8, 9, 10, 11 & 16)	13 JUN 72	1	*		
7	Resistant mechanism with single dial	13 JUN 72		*	*	
8	Resistant mechanism with two dials	13 JUN 72	2		‡	
9	Tare bars	13 JUN 72	2		‡	
10	Locking handle	13 JUN 72	2		‡	
11	Intermediate levers	13 JUN 72			‡	
	HEADWORKS					
12	Non-self-indicating combination headwork (Figures 12, 13, 14 & 15)	13 JUN 72				*

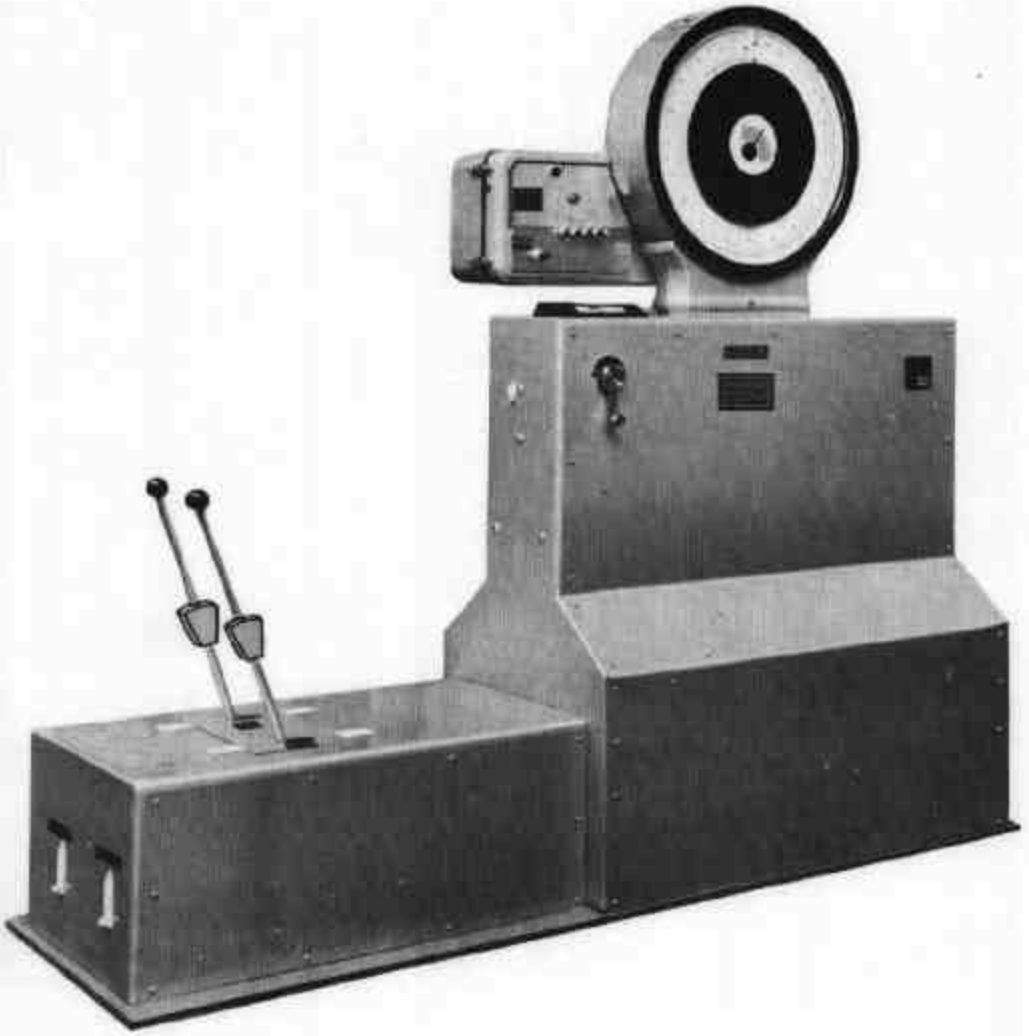
* - indicates required components
A - indicates alternative required components, one only of which is required
‡ - indicates optional components

FOOTNOTES

1 - limited to one instrument located at Port Pirie, South Australia
2 - tare bars (Component No 9) and locking handle (Component No 10) cannot be fitted to instruments with two dials (Component No 8)

Compatibility Table for Components Described in this Certificate

FIGURE 6/10B/16 - 2



Ashworth Self-indicating Combination Headwork
and Ticket Printer

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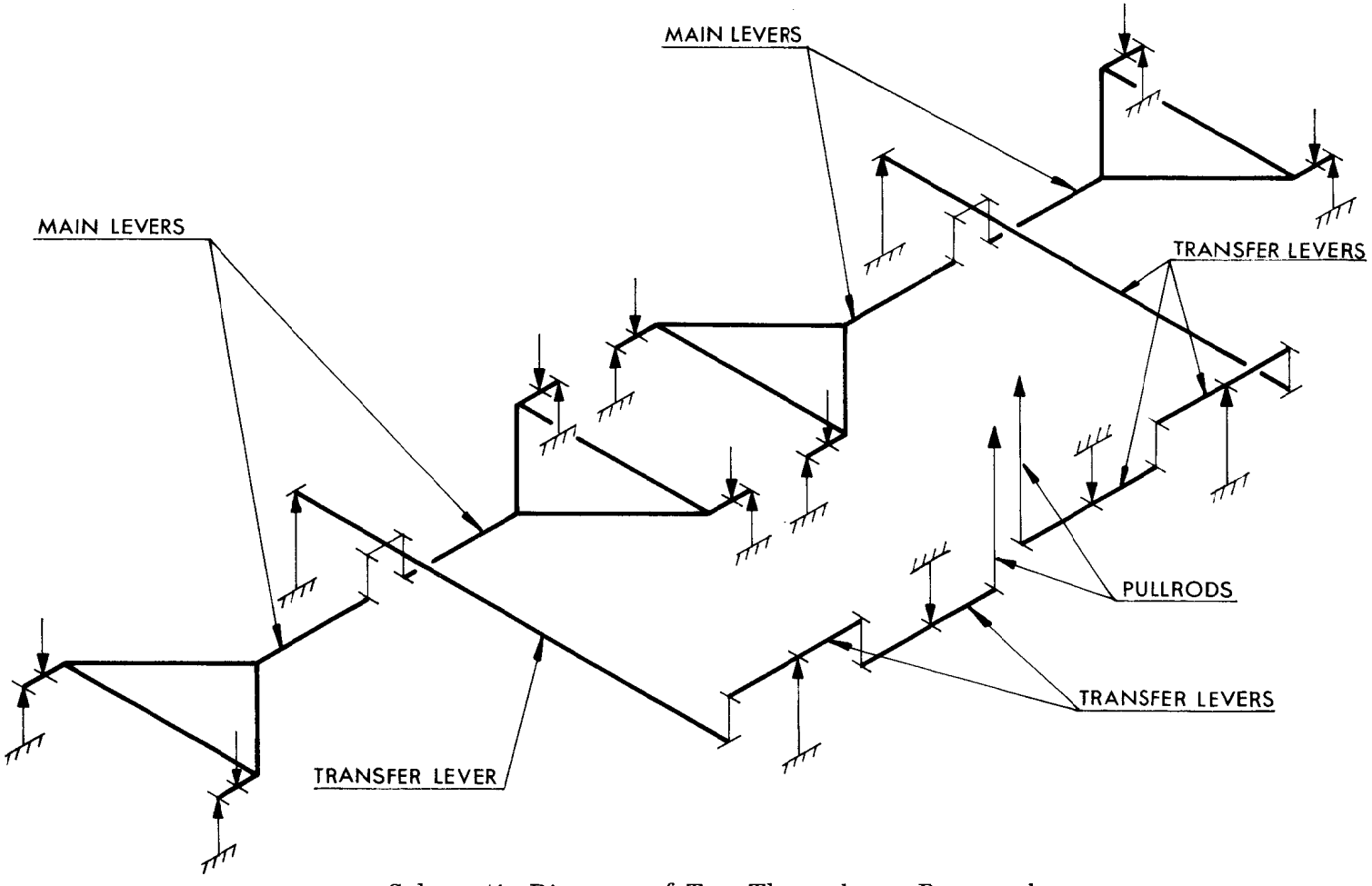
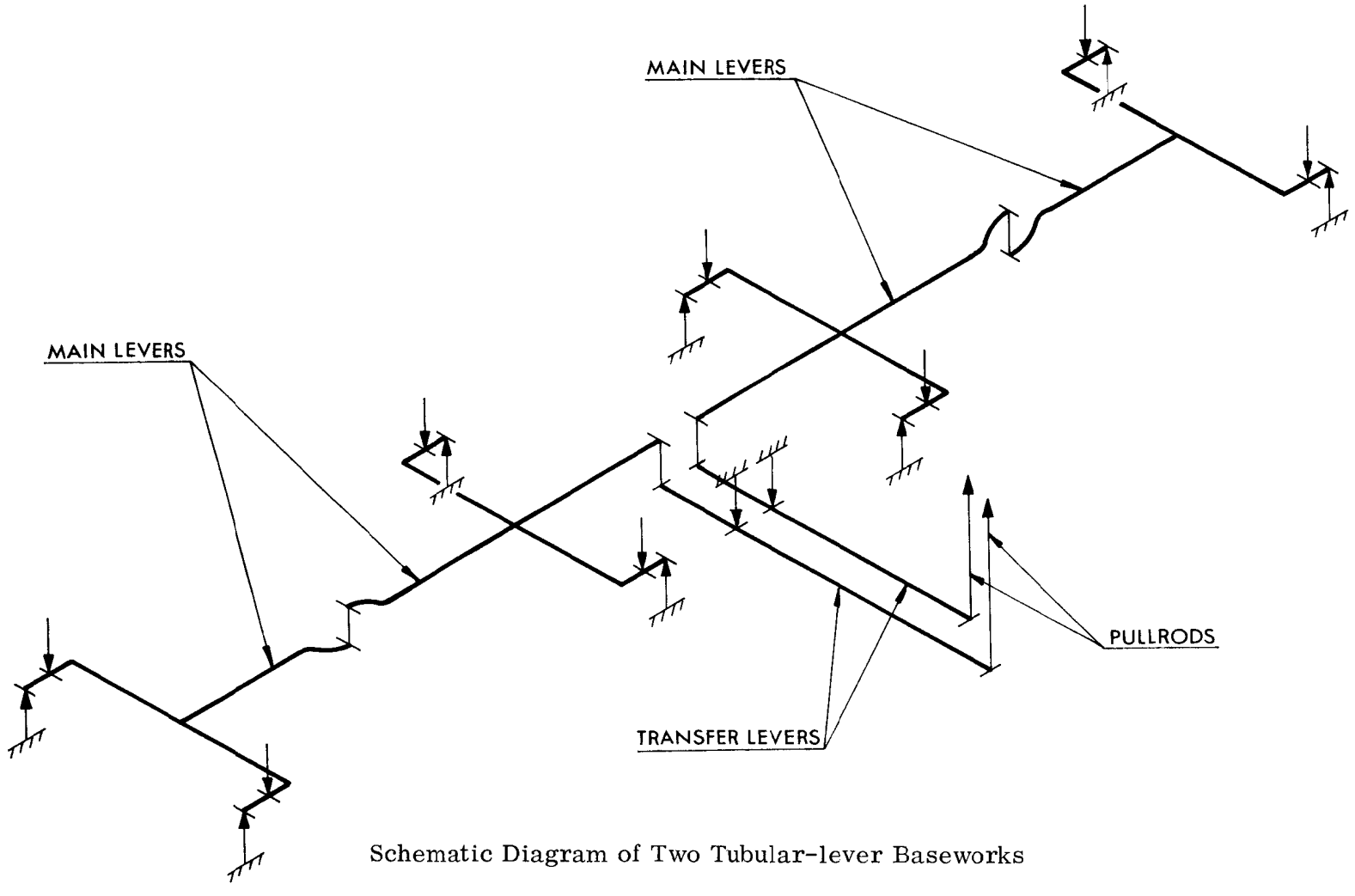
FIGURE 6/10B/16 - 3



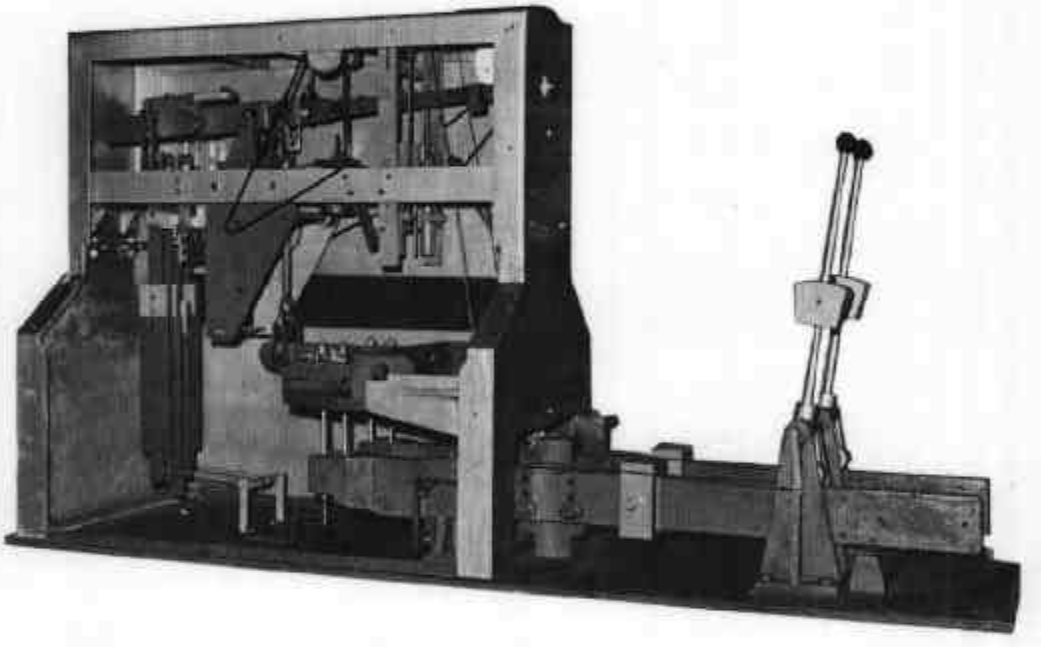
Schematic Diagram of Two Three-lever Baseworks

FIGURE 6/10B/16 - 4



Schematic Diagram of Two Tubular-lever Baseworks

FIGURE 6/10B/16 - 5



Self-indicating Combination Headwork Cabinet
(covers removed)

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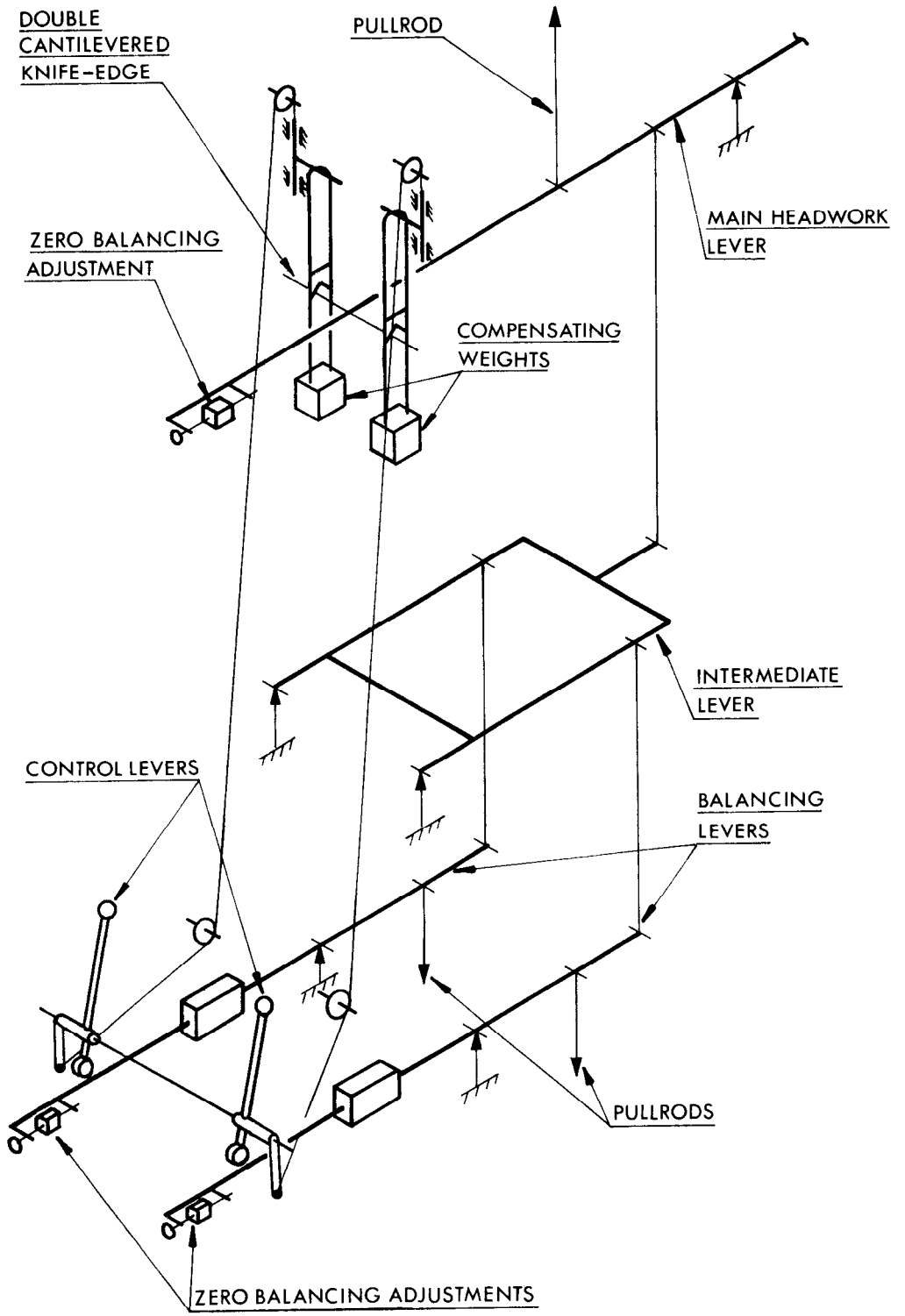
FIGURE 6/10B/16 - 6



Schematic Diagram of Self-indicating Combination
Headwork Cabinet

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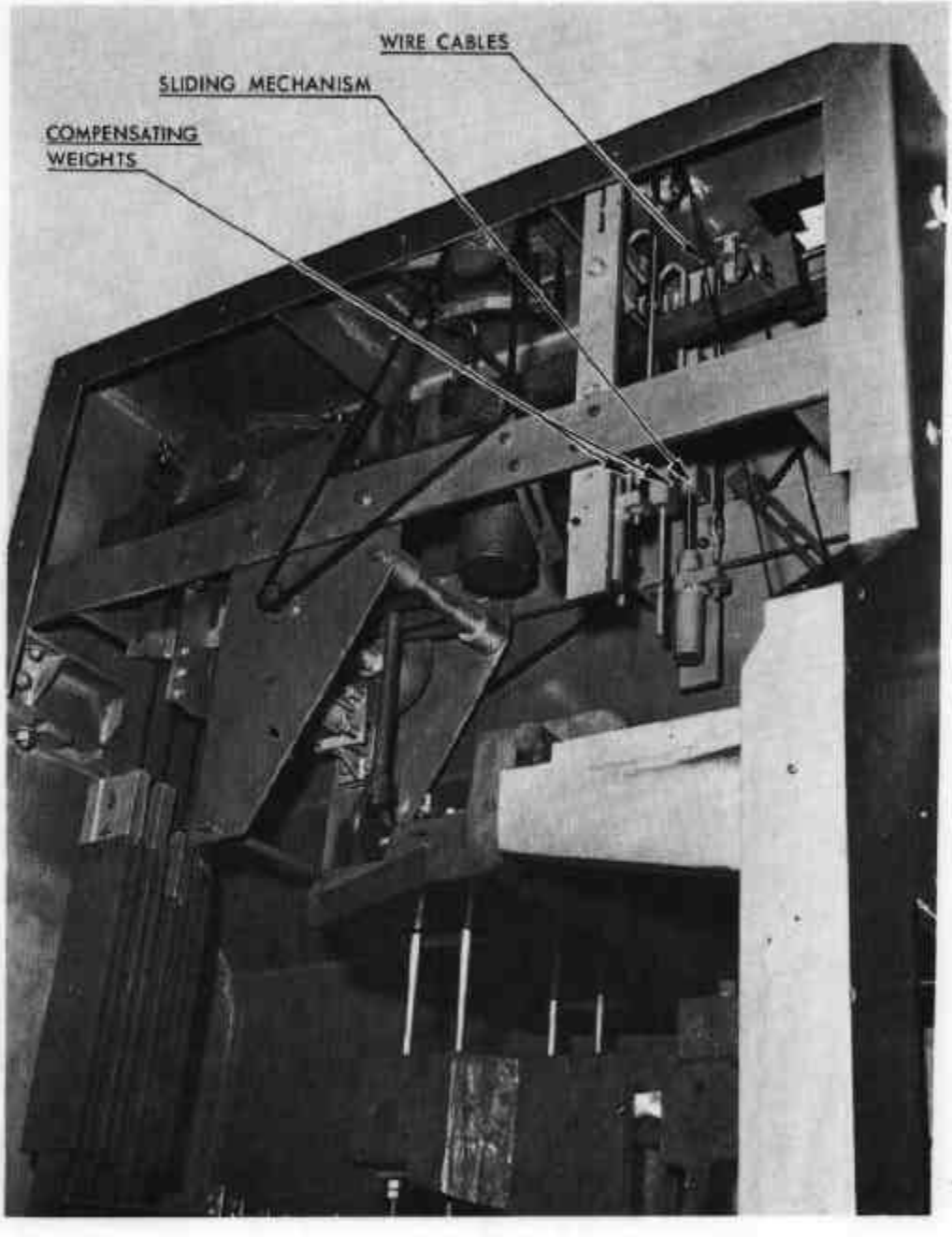
FIGURE 6/10B/16 - 7



Compensating Weights — Self-indicating Combination
Headwork Cabinet

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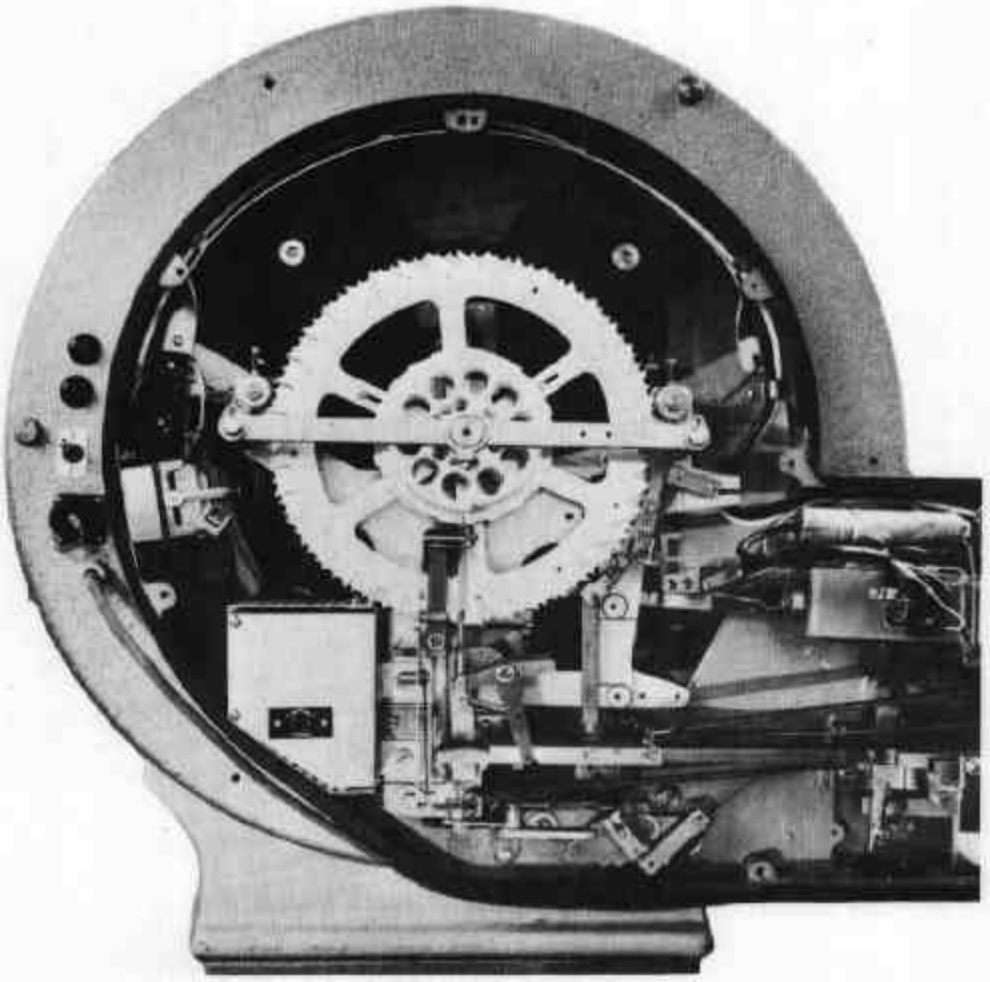
FIGURE 6/10B/16 - 8



Ashworth Ticket Printer
(see also Figure 9)

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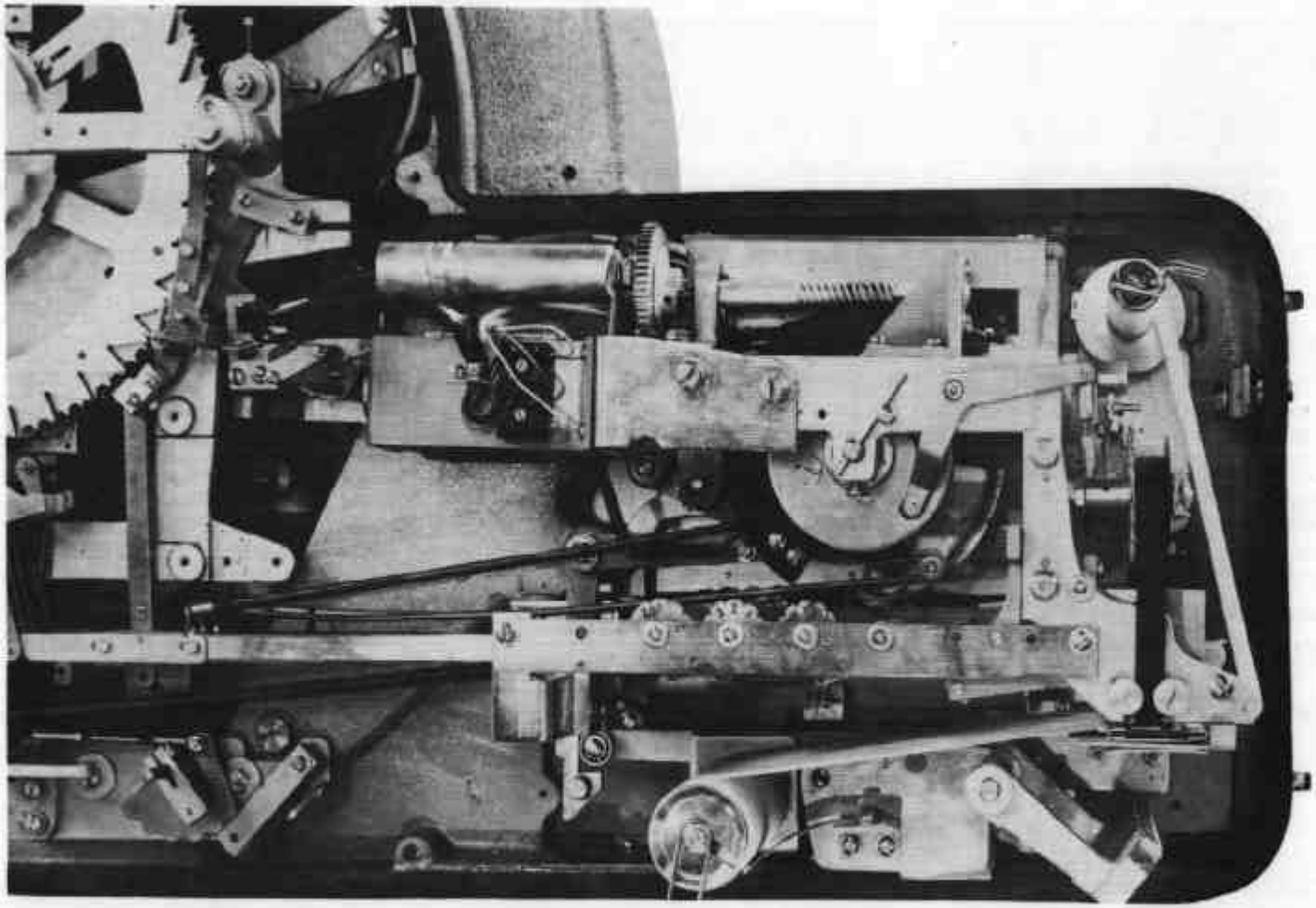
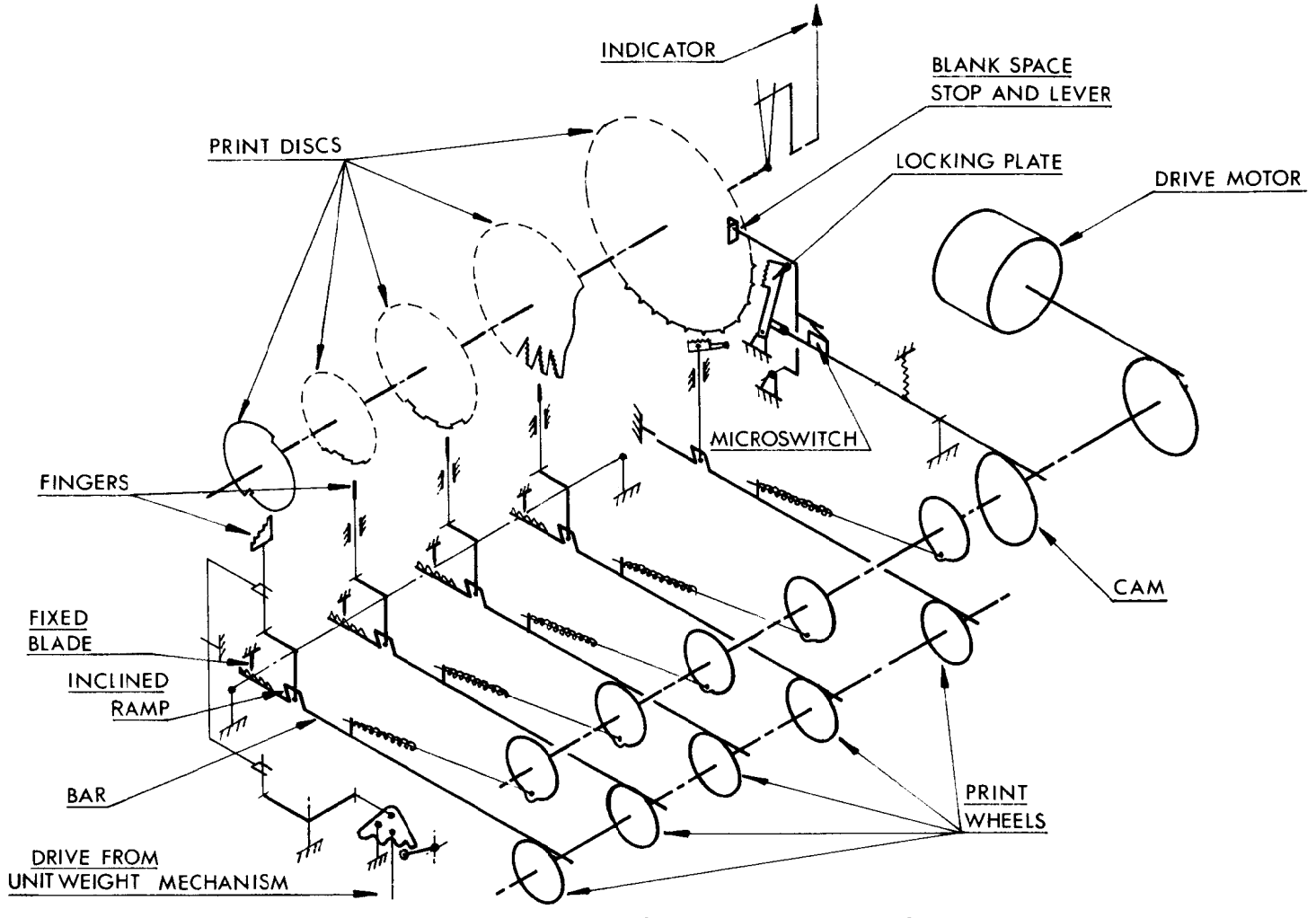
FIGURE 6/10B/16 - 9



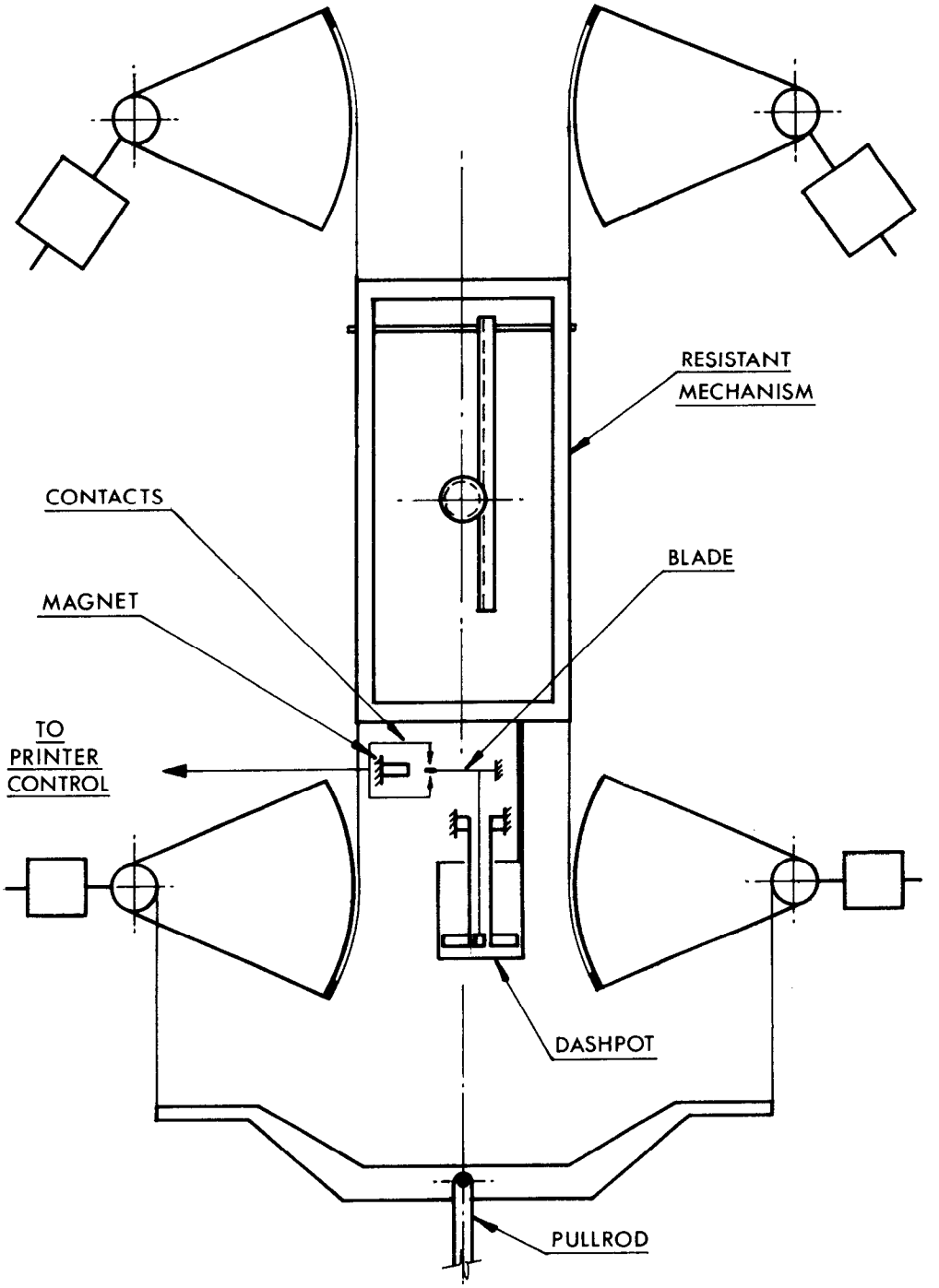
Ashworth Ticket Printer
(see also Figure 8)

FIGURE 6/10B/16 - 10



Schematic Diagram of Ticket-printer Mechanism

FIGURE 6/10B/16 - 11



Resistant Mechanism with Motion Detector

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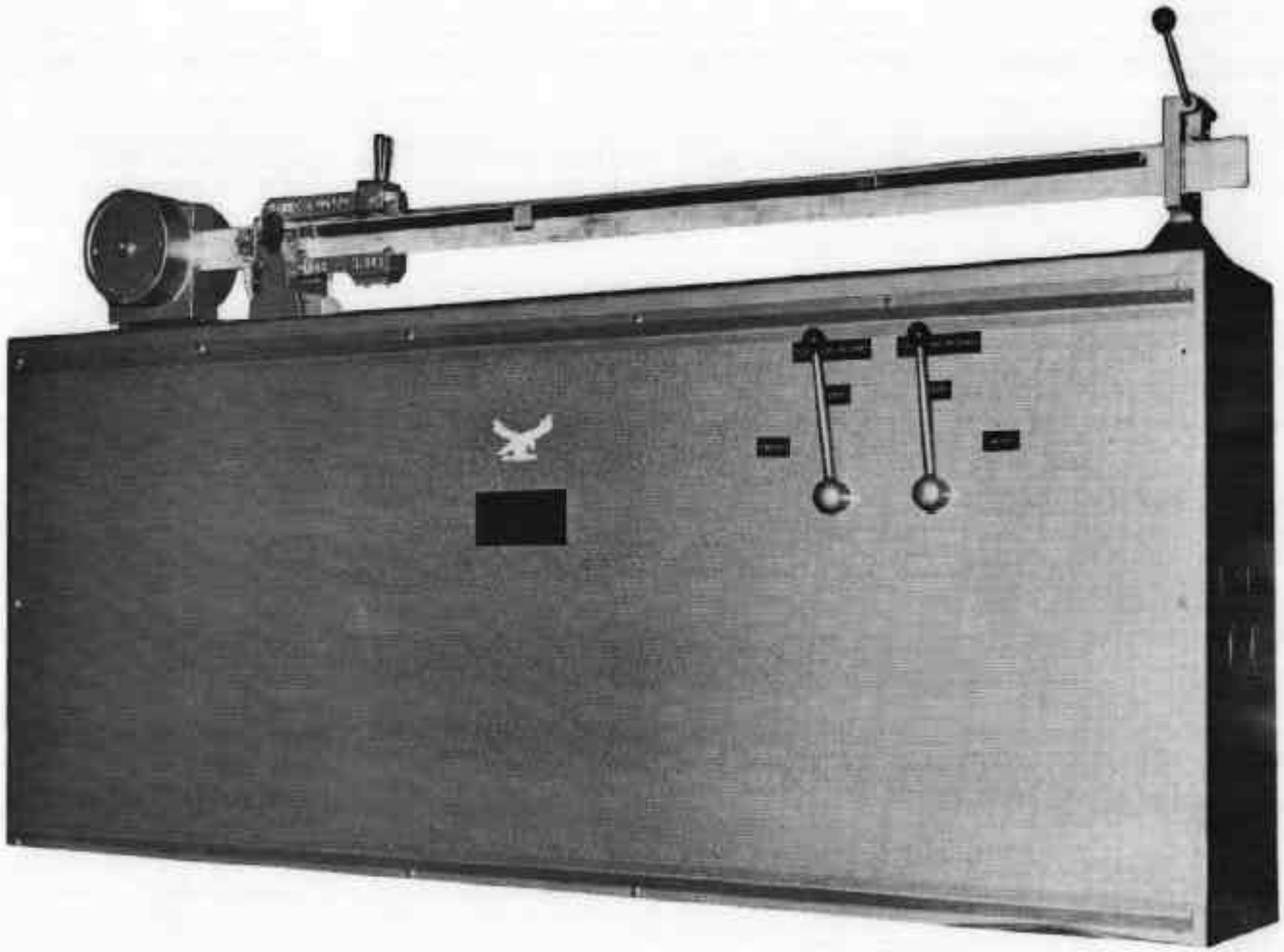
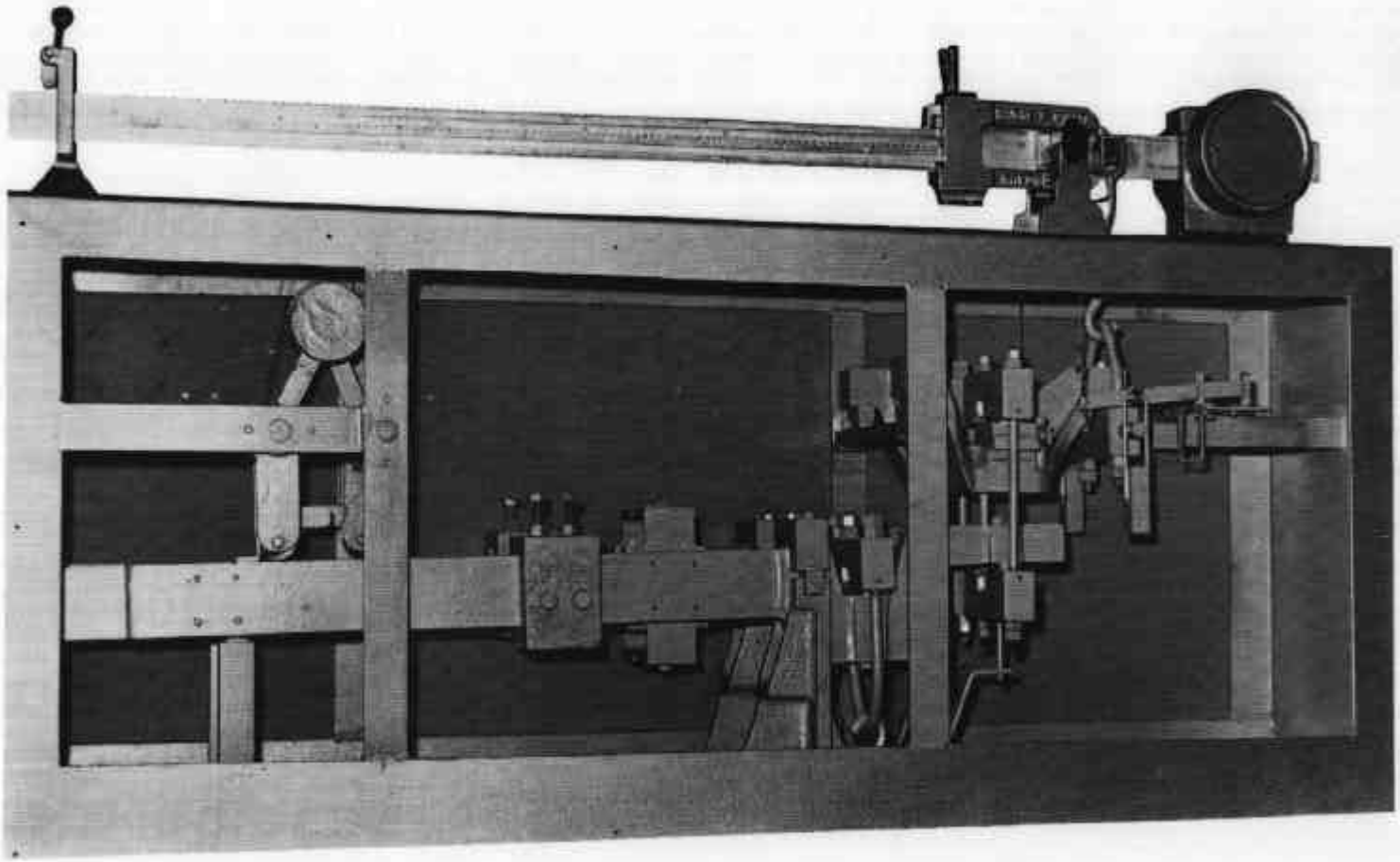
FIGURE 6/10B/16 - 12



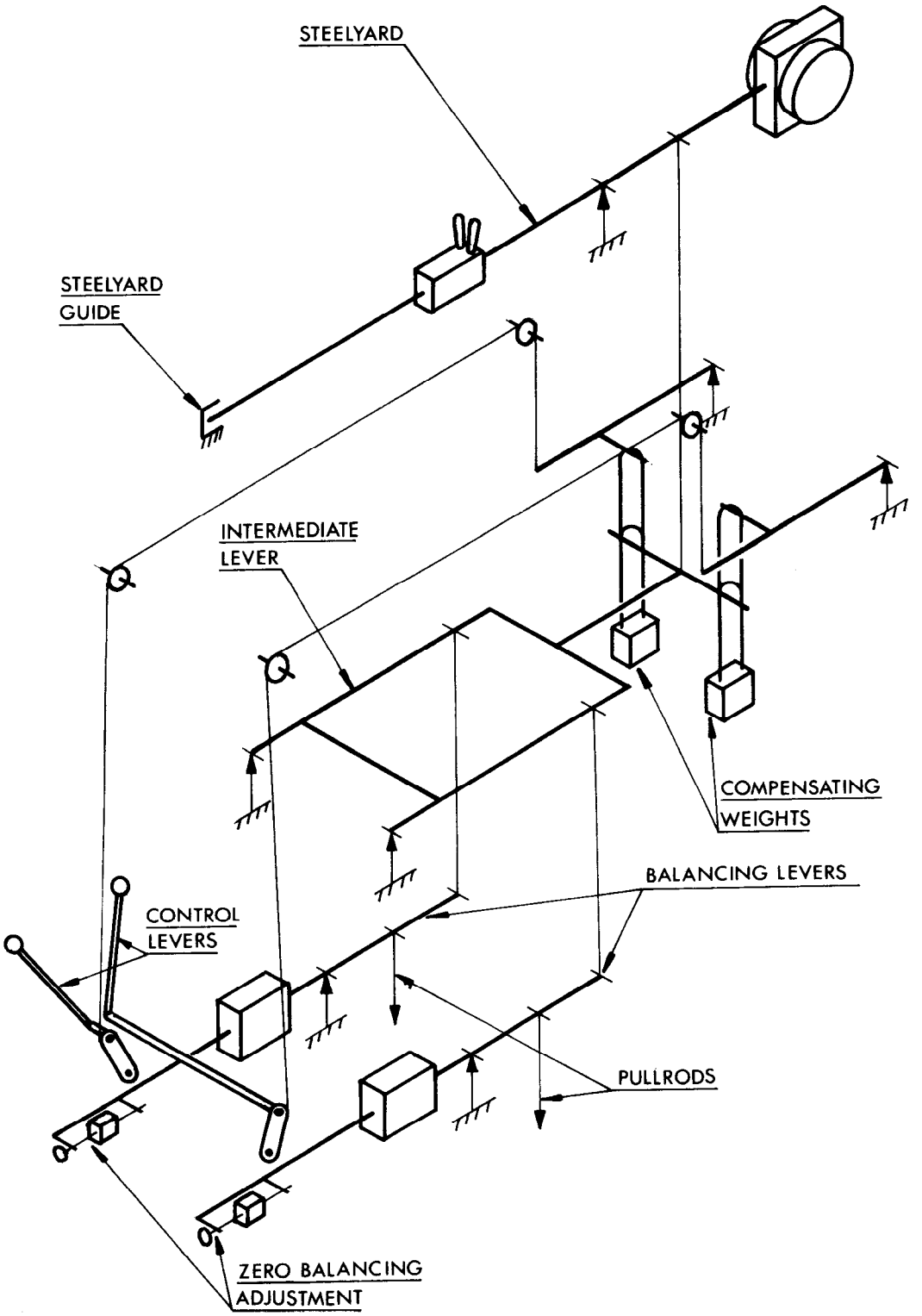
Non-self-indicating Combination Headwork

FIGURE 6/10B/16 - 13



Non-self-indicating Combination Headwork (covers removed)

FIGURE 6/10B/16 - 14



Schematic Diagram of Non-self-indicating Combination Headwork

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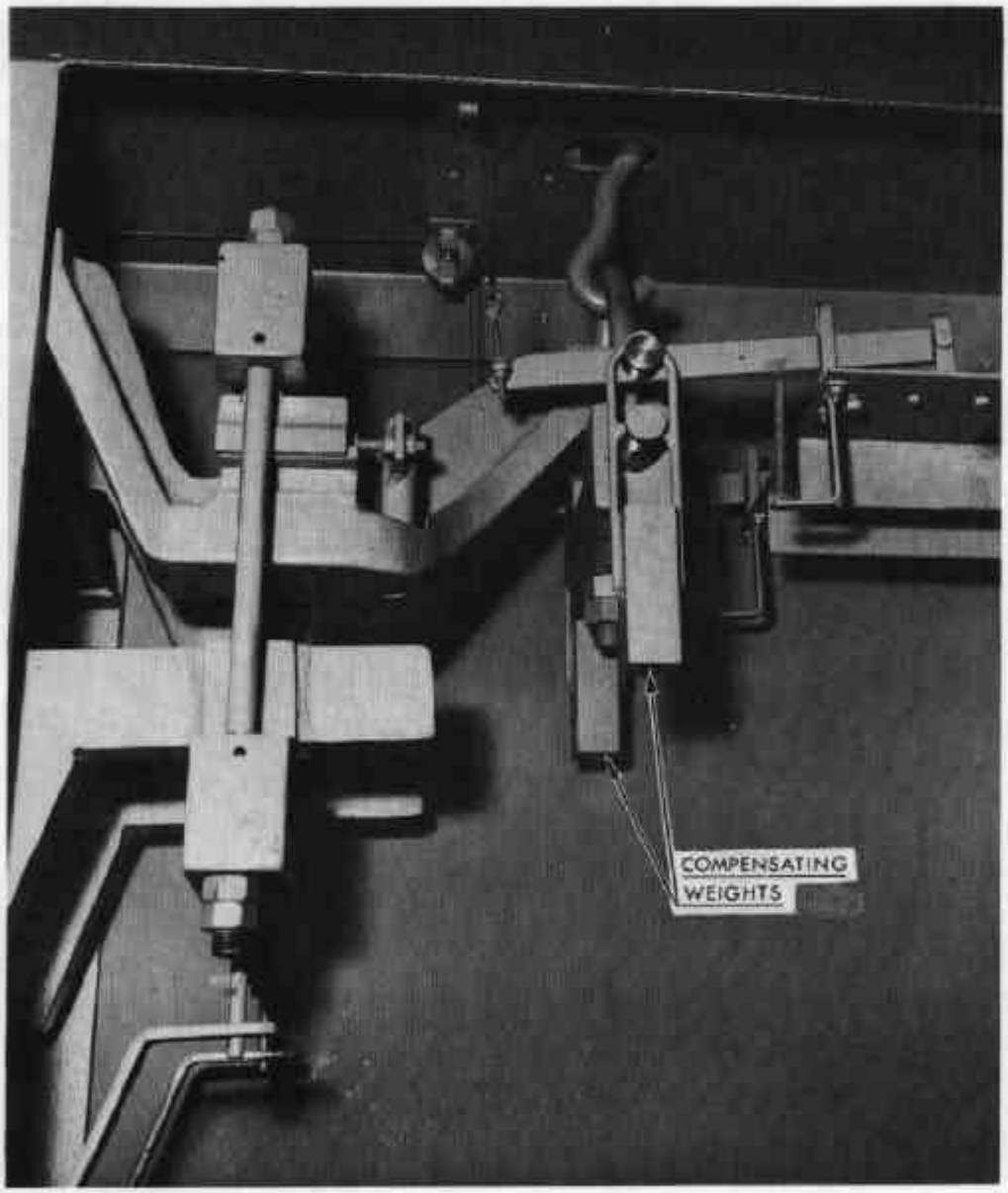
FIGURE 6/10B/16 - 15



Compensating Weights — Non-self-indicating Combination Headwork

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FIGURE 6/10B/16 - 16

RUNNING NR	DATE	CODE	TON	CWT	QR		
						GROSS	
						TARE	

BEFORE PRINTING

RUNNING NR	DATE	CODE	TON	CWT	QR		
0137	4 VIII 71	0000	19	18	0	GROSS	
0136	4 VIII 71	0000	06	13	0	TARE	

AFTER PRINTING

Ticket for Ashworth Printer (actual size)