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CERTIFICATE OF APPROVAL No 6/9C/10

VARIATION No 4

This is to certify that the following modification of the patterns of the
Avery Weighing Instrument Models 4793 BLB and Others
approved in Certificate No 6/9C/10 dated 28 April 1971 and subsequent
variations

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: 27 January 1977

The approved modification, described in Technical Schedule No 6/9C/10 -
Variation No 4 and in drawings and specifications lodged with the
Commission, provides for an electrically driven linear actuator operating
the unit-weight mechanism.

The approval is subject to review on or after 1 April 1980.

All instruments conforming to this approval shall be marked with the
approval number "NSC No 6/9C/10".

Signed


Executive Officer



Weights and Measures
(National Standards)
Act 1960-1966
Weights and Measures
(Patterns of Instruments)
Regulations

COMMONWEALTH OF AUSTRALIA

NATIONAL STANDARDS COMMISSION

Certificate of Approval

CERTIFICATE NUMBER 6/9C/10

In respect of the pattern of

Avery Self-indicating Platform Weighing Machine and Variants.

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 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 11th August, 1967, and further variants were approved on 18th March, 1969, and 20th April, 1971.

The approval for one variant was limited to 30th June, 1972, on 20th April, 1971.

Approval was granted on condition that all instruments made in conformity with this Certificate:

1. are appropriately marked NSC No 6/9C/10 and, where

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Cont'd over

required by State legislation, with the State approval number also; and

2. comply with the General Specifications for Weighing and Measuring Instruments to be Used for Trade, in respect of that part of the instrument which was not previously approved by a State.

This Certificate comprises:

Pages 1 to 7 dated 28th April, 1971.

Figures 6/9C/10 - 1 to 28 dated 28th April, 1971.

Pursuant to regulation 12 of the abovementioned Regulations, this Certificate is applicable in all States in respect of variants fitted with Components 9 and 24.

Date of issue 28th April, 1971.

Signed



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

DESCRIPTION OF PATTERN

The pattern is of a self-indicating platform weighing machine (see Figure 2) of 4000 lb capacity. The headwork has a dial graduated to 1000 lb by 1 lb graduations and a flash chart connected to a unit-weight mechanism which deposits three unit weights, each equivalent to the chart capacity (see Figure 17). It is known as the Avery Type 4793 BLB and comprises the components tabulated in Column 5 of Figure 1.

DESCRIPTION OF VARIANTS

The components tabulated in Columns 6, 7 and 8 of Figure 1 make up variants of the pattern with capacities up to 3 tons for the two and three-lever systems described in Components 1 and 2, and may be extended up to the approved capacity of other baseworks described in Components 9 and 10.

DESCRIPTION OF COMPONENTS

1. Two-lever system (see Figures 3 and 4) — consists of a long and a short second-order lever coupled by a self-aligning link. The knife-edges are mounted in machined grooves and held in position by studs passing through the lever into the back of the knife-edge blocks. The platform is attached to a stool mounted on the four load knife-edges.
2. Three-lever system (see Figures 5 and 6) — consists of three second-order levers with knife-edges mounted as in Component 1; the two short levers are coupled by self-aligning links to the long lever. The load is applied to four knife-edges through a platform-supporting stool.
3. Swinging-link lever suspension (see Figure 7) — the main lever fulcrum knife-edges are supported in swinging links with self-aligning bearings, hung from brackets carrying two knife-edges which are mounted on the base frame.
4. Fixed lever suspension (see Figure 8) — the fulcrum bearings are supported directly on the bracket mounted on the base frame.

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5. Fixed pedestal suspension (see Figure 9) — provides main-lever fulcrum support without the use of a base frame.
 6. Ball-bearing platform support (see Figure 10) — the load platform is mounted on ball supports on the stool which rests on the load knife-edges of the main lever, allowing limited lateral motion of the platform.
 7. Shock-absorbing platform supports (see Figure 11) — the load platform is mounted with spring or rubber shock-absorbing mounts between the platform and the supporting stool.
 8. Fixed platform mounting — the load platform is bolted directly to the supporting stool.
 - *9. Other State-approved baseworks.
 10. Other Commission-approved baseworks.
 11. Pillar headwork (see Figure 12) — the basework pullrod connects through a single intermediate lever to the main headwork lever, to which are connected the balance weight, the zero adjustment and oil dashpot (see Figure 13).
 12. Cabinet, fabricated (see Figures 14 and 15) — the cabinet houses the main headwork lever whose fulcrum bearings are supported on a pedestal mounted on angle-iron bearers which form the centre stiffening of the cabinet. To the main headwork lever are attached the balance weight, the zero adjustment and oil dashpot.
 13. Cabinet, cast-iron frame (see Figures 16 and 17) — the cabinet is similar to Component 12, except that the fulcrum bearings of the main headwork lever are hung, in integral cast brackets, from the top of the cabinet.
 14. Unit-weight depositing mechanism (see Figure 18) — a single unit weight equivalent to the dial capacity is deposited on the main headwork lever by a simple lever mechanism operated by a
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* Approved pursuant to regulation 12.

handle on the front of the cabinet (see Figure 19). The selection of the unit weight changes the major weight values in a series of apertures in the dial face.

15. Unit-weight depositing mechanism (see Figures 15 and 20) — up to four unit weights, each equivalent to the chart capacity, are deposited on or removed from the main headwork lever, at positions equidistant on either side of the fulcrum point, by a forked lever actuated through a pair of 45° bevel gears by a handle on the side of the cabinet. The rate of depositing weights is controlled by an oil dashpot. The lever is spring-loaded so as to return the unit-weight combination in the next lowest value if the manual selecting handle on the side of the cabinet is not properly located by a spring-loaded pin on the handle.

The operation of the unit-weight selecting mechanism changes the major weight values in apertures in the dial face.

16. Unit-weight depositing mechanism (see Figures 17 and 21) — which provides up to nine extra ranges by depositing nine binary combinations of four unit weights on to the main headwork lever through a system of cams driven by a handle on the front of the cabinet (see Figure 19). Each revolution of the handle selects the next combination in steps equal to the dial capacity, at the same time changing the major weight values appearing in apertures on the instrument dial.
17. The unit-weight mechanism of Component 16 driven by a reversible electric motor (see Figure 17) — operated by push-buttons in the face of the cabinet. The changeover to manual operation is effected by a control on the side of the cabinet (see Figure 19), which also disconnects the power from the motor.
18. Intermediate levers — two are mounted in the headwork cabinet (see Figures 15 and 17).
19. Tare bars — two are mounted on the main headwork lever (see Figures 12 and 14).
20. Spring-resistant mechanism, Type CLA (see Figure 22) — is mounted in the dial housing on top of the headwork cabinet or pillar. The pullrod from the main headwork lever is coupled

to a lever pivoted in ball bearings near its centre. To one end of the lever is attached the temperature-stable spring resistant and to the other the rack assembly by means of a shock-absorbing spring. The rack drives a pinion fixed to a ball-bearing mounted indicator spindle. The rack is maintained in mesh with the pinion by an overhanging weight and an adjustable roller. This mechanism is suitable only for dials with up to 3.0 graduations per degree.

21. Spring-resistant mechanism, Type CFA (see Figure 23) — is a two-lever system in which the indicator-pinion driving rack is attached to one end of a second-order lever by means of a shock-absorbing spring; this lever is coupled to another second-order lever which has the temperature-stable spring resistant and the pullrod from the main headwork lever attached. This mechanism is suitable only for dials with up to 3.0 graduations per degree.
22. Pendulum-resistant mechanism, Type CGA (see Figure 24) — is a double-pendulum unit of the floating fulcrum type. In this unit the pullrod from the main headwork lever is coupled to a yoke which has attached to either end the steel ribbons from the load-bearing sectors. The pendulums are suspended from the frame of the instrument by steel ribbons which are attached to the fulcrum sectors. The common pivot point of the load-bearing sectors and fulcrum sectors of each pendulum are interconnected by a level-compensating bar at the centre of which is pivoted the shock-absorbing spring connection to the rack which engages the pinion of the indicator shaft. This mechanism is suitable only for dials with up to 3.0 graduations per degree.
23. Two dials — mounted one on either side of the dial housing (see Note 1 of Figure 1).
- *24. Ticket printer (see Figures 25 and 26) — is mounted in a fabricated square dial housing which replaces the conventional circular housing. The printer has a circular disc fitted to the main indicator shaft and this is embossed with digits corresponding to the dial graduations. A type-disc selecting mechanism coupled to the unit-weight selector allows the printed weight to be extended beyond the dial capacity.

Code characters, time and date may also be printed. Printing is

* Approved pursuant to regulation 12.

inhibited until the instrument is in equilibrium by a motion detector which may operate either mechanically or electrically.

25. Full-capacity steelyard (see Figure 27) — the steelyard has a major poise located by a nib fitting into notches along the bar with a notch-protection bar located at the rear of the steelyard. The minor poise slides on a secondary scale mounted on the front of the steelyard.
- *26. Full-capacity steelyard with ticket-printing poise (see Figure 28) — the steelyard and major-poise setting are as for Component 25; two minor poises are housed within the ticket-printing poise. Operating a lever on the underside of the poise embosses a ticket with the weight set on the three poises.

GENERAL NOTES

Notice of approval of the pattern and some variants described in this Certificate was given in Memorandum of Approval No 83 dated 15th August, 1967, and Memorandum of Approval No 152 dated 24th March, 1969.

No previous notice of approval has been given for variants fitted with the ticket printer described in Component 24 or for the withdrawal of variants fitted with the ticket-printing poise described in Component 26.

* Approval expires 30th June, 1972.

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NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/9C/10

VARIATION No 1

Pattern: Avery Model 4793 Weighing Instrument

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

Date of Approval of Variants: 31 May 1974

The modifications described in this schedule apply to the pattern and variants described in the following pages and figures of Certificate No 6/9C/10 dated 28 April 1971:

Pages 3 to 7 dated 28 April 1971

Figures 6/9C/10 - 1 to 28 dated 28 April 1971

All instruments conforming to this approval shall be marked "NSC No 6/9C/10".

Description:

The approved modifications are:

1. A fabricated headwork and dial housing (see Figures 29 and 30).
2. A fabricated headwork lever system (see Figure 30).
3. Conversion of all weighing instrument models to indicate in metric units in accordance with Appendix 8 of the General Specifications for Measuring Instruments to be Used for Trade.

Note: A pneumatic or electrical switch to control peripheral equipment may be installed for use with this pattern. For a pneumatic switch a check should be made that the indication does not change when the air supply is cut off.



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/9C/10

VARIATION No 2

Pattern: Avery Model 4793 Weighing Instrument

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

Date of Approval of Variation: 16 April 1975

The modification described in this Schedule applies to the patterns described in the following pages and figures of Certificate No 6/9C/10 dated 28 April 1971 and Technical Schedule No 6/9C/10 - Variation No 1 dated 13 June 1974:

Pages 3 to 7 dated 28 April 1971 (Certificate)
Page 1 dated 13 June 1974 (Technical Schedule)
Figures 6/9C/10 - 1 to 28 dated 28 April 1971
Figures 6/9C/10 - 29 and 30 dated 13 June 1974

All instruments conforming to this approval shall be marked
"NSC No 6/9C/10".

Description:

The approved modification provides for electrically operated unit weights selected either manually or automatically.



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/9C/10

VARIATION No 3

Pattern: Avery Weighing Instrument Models 4793 BLB and Others
approved in Certificate No 6/9C/10 dated 28 April 1971
and subsequent variations

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

Date of Approval of Variation: 21 October 1976

The modifications described in this Schedule apply to the patterns described in Certificate No 6/9C/10 dated 28 April 1971 and Technical Schedule No 6/9C/10 - Variation Nos 1 and 2 dated 13 June 1974 and 30 April 1975 respectively.

All instruments conforming to this approval shall be marked "NSC No 6/9C/10".

Description:

The approved modifications provide for:

1. A fabricated three-lever basework (see Figures 6 and 31) with a load receptor* of up to 2,5 x 2 m. The basework, which is for loads of up to 5000 kg, comprises three levers, the fulcrums of which are supported in self-aligning bearings mounted in swinging links which are in turn suspended on rods in machined grooves in the pedestals (see Figure 32). The pedestals may be mounted in the baseframe or directly to the pit foundation. The basework is known as a Model 4783 when the pedestals are supported on the baseframe and Model 4782 when supported directly from the pit foundation.
2. Baseworks of other Commission-approved patterns replacing the baseworks described in the patterns and subsequent variations,

* The rules of Document 103 - the Commission's Model Inspection Rules, in relation to reading distance, shall be applied if the reading face of the instrument faces the platform.

provided that:

- (a) The basework* is of an instrument conventionally known as a platform weighing machine, weighbridge or hopper scale, etc., where the headwork and basework are separate assemblies connected by a mechanical linkage.
- (b) The capacity of the instrument is not more than the capacity approved for the basework.
- (c) A levelling device and an indicator are fitted, except for instruments installed in a fixed position or instruments which satisfy the following:

Tilting at no-load — the zero indication does not vary more than 2e when the instrument is tilted to a slope of 1 in 20, the zero being first adjusted in the reference (level) position; and

Tilting when loaded — the indication of weight does not vary more than e when the instrument is tilted to a slope of 1 in 20, the indication at zero being adjusted in the reference position before tilting and in the tilted position before reloading.

- (d) If a level indicator is required its sensitivity shall be such that, when the instrument is tilted so that the bubble in the level indicator moves 2 mm, the zero will not change by more than two graduations, and when zero is reset in the tilted position the instrument will satisfy the weighing-accuracy specification, that is, $\pm \frac{1}{2}$ graduation for the first 500 graduations, ± 1 graduation for graduations over 500 and up to 2000, and $\pm 1\frac{1}{2}$ graduations over 2000 graduations.

- (e) The instrument is marked:

"Approval Numbers

Headwork NSC No 6/9C/10
Basework NSC No

Each of the above modifications includes the requirement for appropriate capacity markings on each weight reading face or adjacent to the steelyard, for example:

"	III	"
Max	= 5000 kg	(Instrument with four unit weights)
Min	= 50 kg	
"	d = e	= 1 kg "

* The basework must fully conform with the Commission approval — no extra force breakdown or transfer levers may be fitted other than those approved.



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/9C/10

VARIATION No 4

Pattern: Avery Weighing Instrument Models 4793 BLB and Others

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

Date of Approval of Variation: 27 January 1977

The modification described in this Schedule applies to the patterns described in Certificate No 6/9C/10 dated 28 April 1971 and Technical Schedule No 6/9C/10 - Variation Nos 1, 2 and 3 dated 13 June 1974, 30 April 1975 and 25 November 1976 respectively.

All instruments conforming to this approval shall be marked "NSC No 6/9C/10".

Description:

The approved modification provides for the unit-weight mechanism to be operated by an electrically driven linear actuator (see Figure 33). This device is suitable for up to four unit weights. The system provides for automatic selection of unit weights appropriate to the load or the preselection of any desired unit weight for a known load.

FIGURE 6/9C/10 - 1

1	2	3	4	5	6	7	8
	COMPONENT	DATE OF APPROVAL	FOOT-NOTES	PATTERN	VARIANTS		
	<u>BASEWORK COMPONENTS</u>						
1	2-lever system (Figures 3 and 4)	11 AUG 1967		*	A	A	A
2	3-lever system (Figures 5 and 6)	11 AUG 1967			A	A	A
3	Swinging-link lever suspension (in a base frame) (Figure 7)	11 AUG 1967		*	B	B	B
4	Fixed lever suspension (in a base frame) (Figure 8)	11 AUG 1967			B	B	B
5	Fixed pedestals (Figure 9)	11 AUG 1967			B	B	B
6	Ball-bearing platform support (Figure 10)	11 AUG 1967		*	C	C	C
7	Shock-absorbing platform support (Figure 11)	11 AUG 1967			C	C	C
8	Fixed platform support	11 AUG 1967			C	C	C
	<u>BASEWORKS</u>						
9	Other State-approved baseworks	18 MAR 1969			A, B, C	A, B, C	A, B, C
10	Other Commission-approved baseworks	18 MAR 1969			A, B, C	A, B, C	A, B, C
	<u>HEADWORK COMPONENTS</u>						
11	Pillar (Figures 12 and 13)	11 AUG 1967				*	
12	Cabinet, fabricated (Figures 14 and 15)	11 AUG 1967			D		
13	Cabinet, cast-iron frame (Figures 16 and 17)	11 AUG 1967		*	D		
14	Unit-weight depositing mechanism, single unit weight (Figure 18)	11 AUG 1967			x		
15	Unit-weight depositing mechanism, four unit weights (Figures 15 and 20)	11 AUG 1967		*	x		
16	Unit-weight depositing mechanism, nine unit weights (Figures 17 and 21)	11 AUG 1967			x		
17	Unit-weight depositing mechanism (motor driven), nine unit weights (Figure 17)	20 APR 1971			x		
18	Intermediate levers, 2 (1, 3 or none optional on variants)	11 AUG 1967		*	+	+	
19	Tare bars (1 or 2 optional on variants)	11 AUG 1967			+	+	
20	Spring-resistant mechanism, Type CLA (Figure 22)	11 AUG 1967		*	E	E	
21	Spring-resistant mechanism, Type CFA (Figure 23)	11 AUG 1967			E	E	
22	Pendulum-resistant mechanism, Type CGA (Figure 24)	11 AUG 1967			E	E	
23	Two dials	11 AUG 1967			+	+	
24	Ticket printer (Figures 25 and 26)	20 APR 1971	1				
25	Full-capacity steelyard (Figure 27)	11 AUG 1967			+	+	F
26	Full-capacity steelyard with ticket-printing poise (Figure 28)	11 AUG 1967	2				F

FOOTNOTES

- 1 - if the instrument is fitted with two dials no tare bars are fitted
- 2 - approval expires 30th June, 1972

- indicates required components

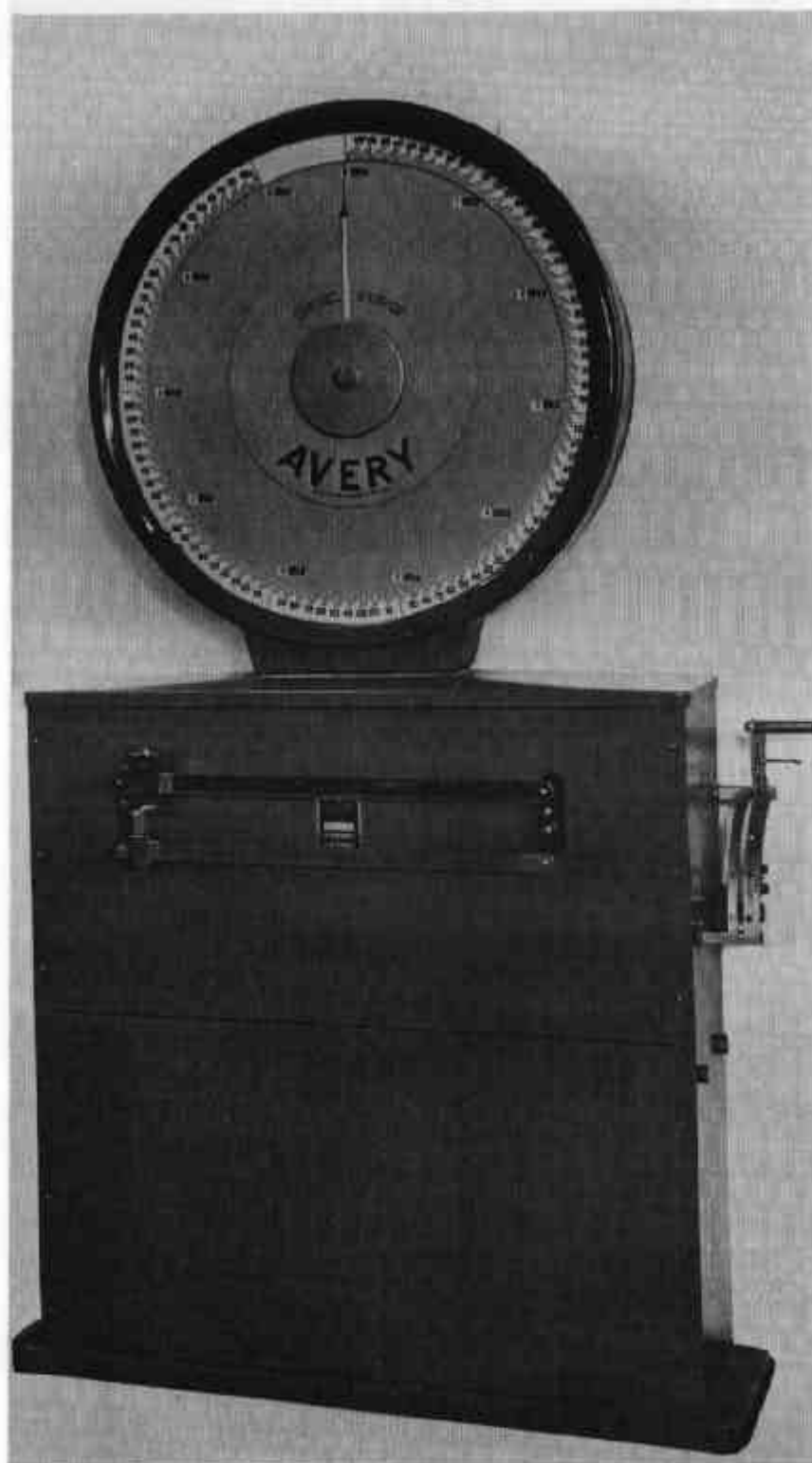
- indicates optional components

- indicates optional alternative components

A, B, C, D, E, F - indicates alternative components, one only of which is required

Compatibility Table for Components Described
in this Certificate

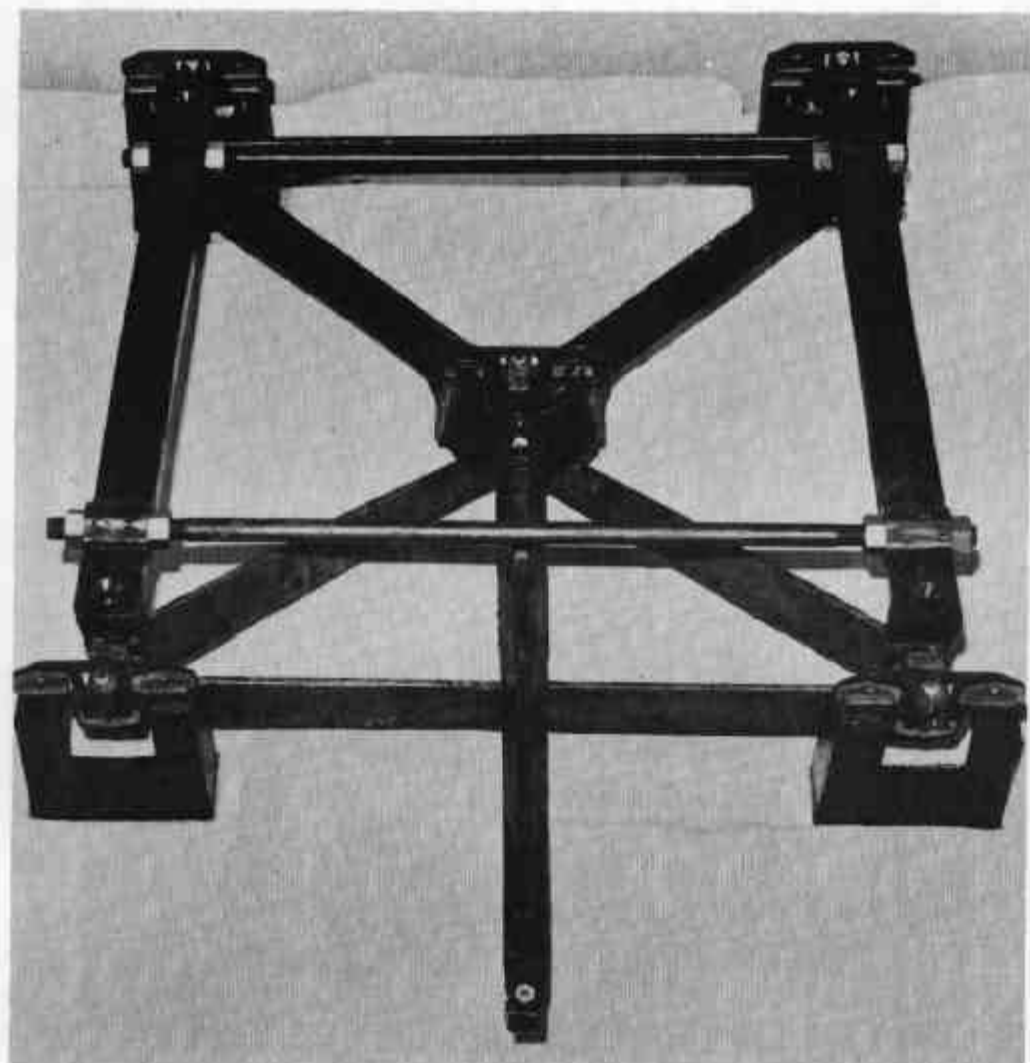
FIGURE 6/9C/10 - 2



Avery 4793 BLB with Cast-iron Cabinet (without Basework)

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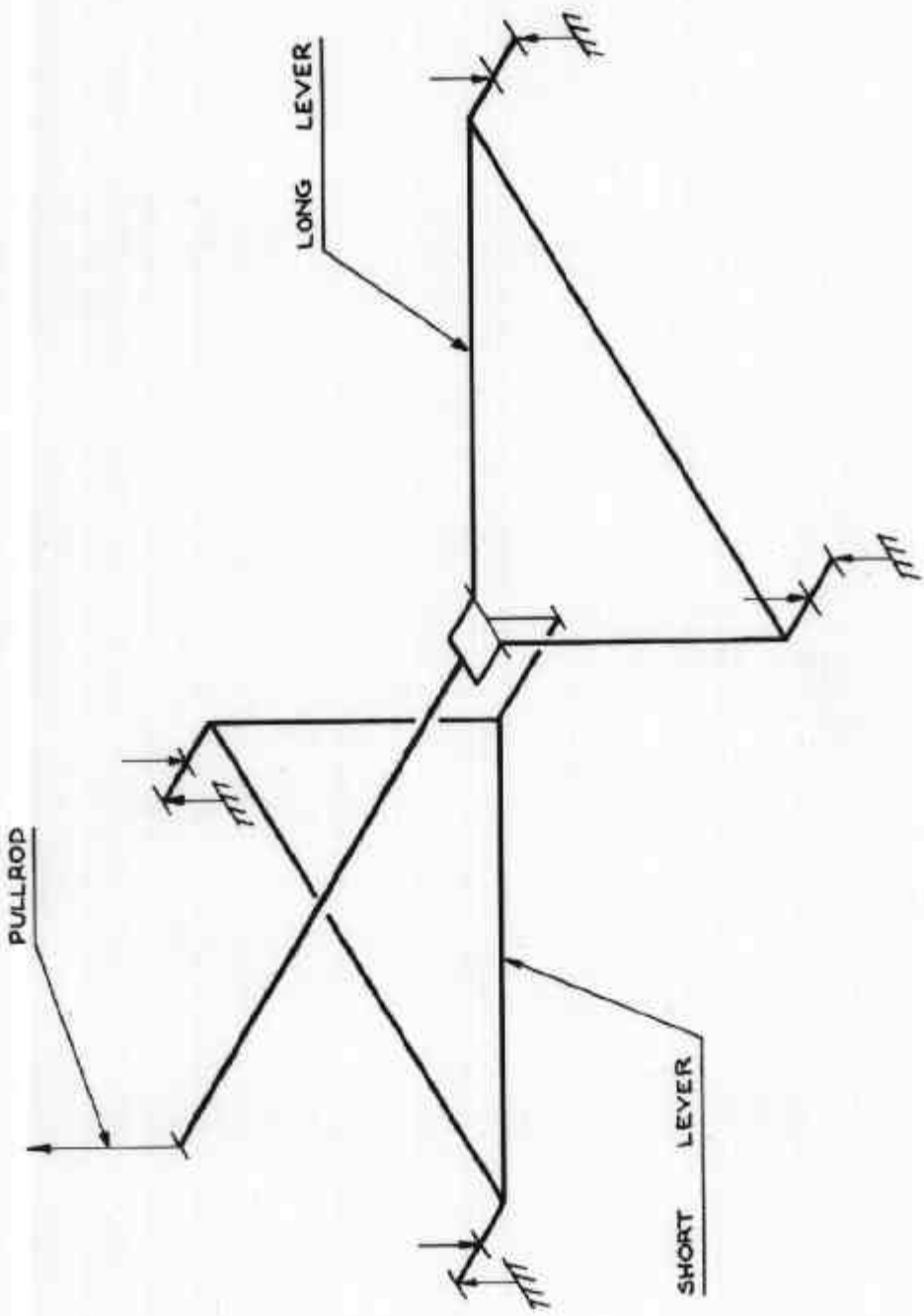
FIGURE 6/9C/10 - 3



Two-lever System

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FIGURE 6/9C/10 - 4



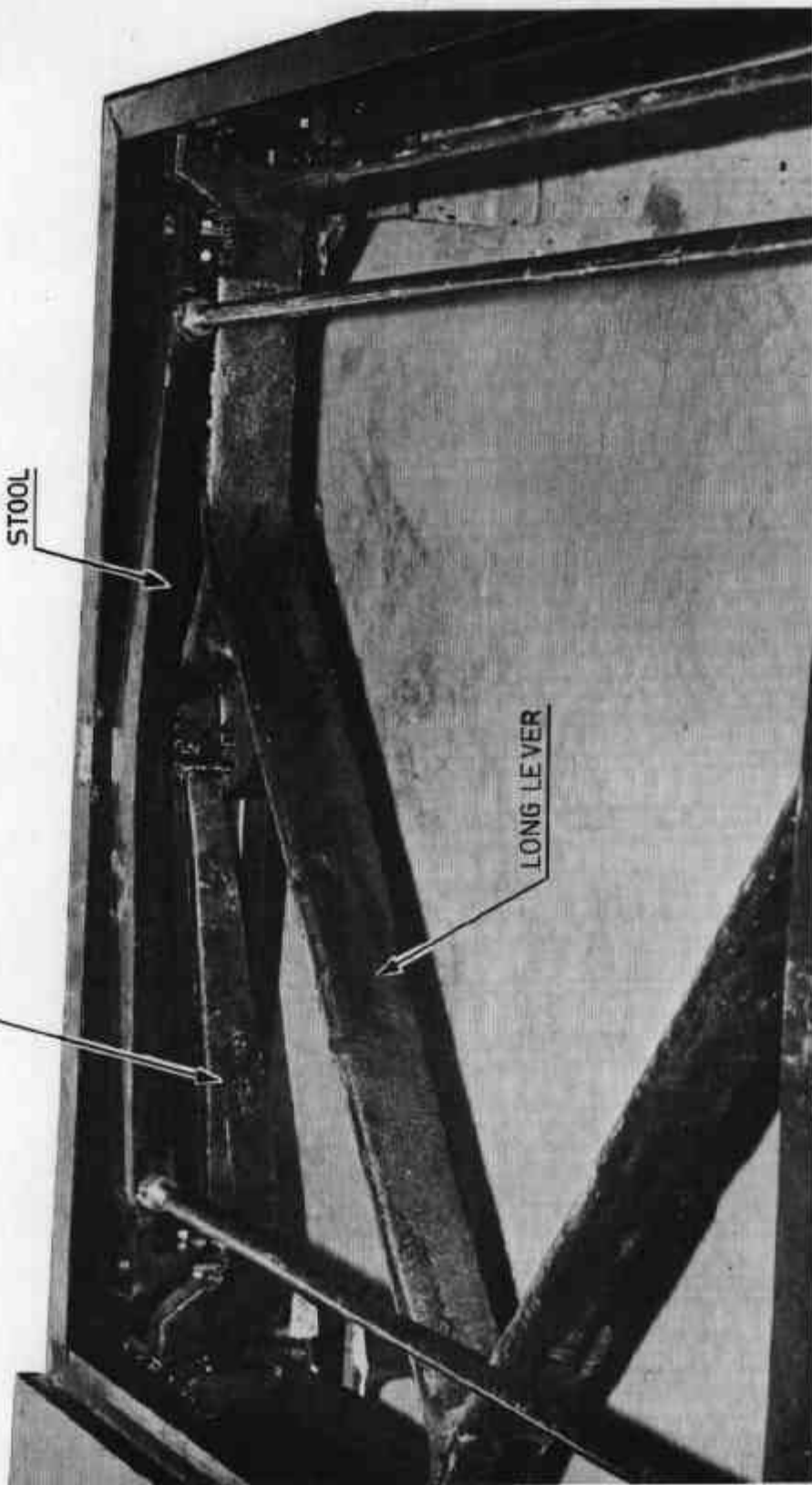
Two-lever System — Lever Diagram

FIGURE 6/9C/10 - 5

SHORT LEVER

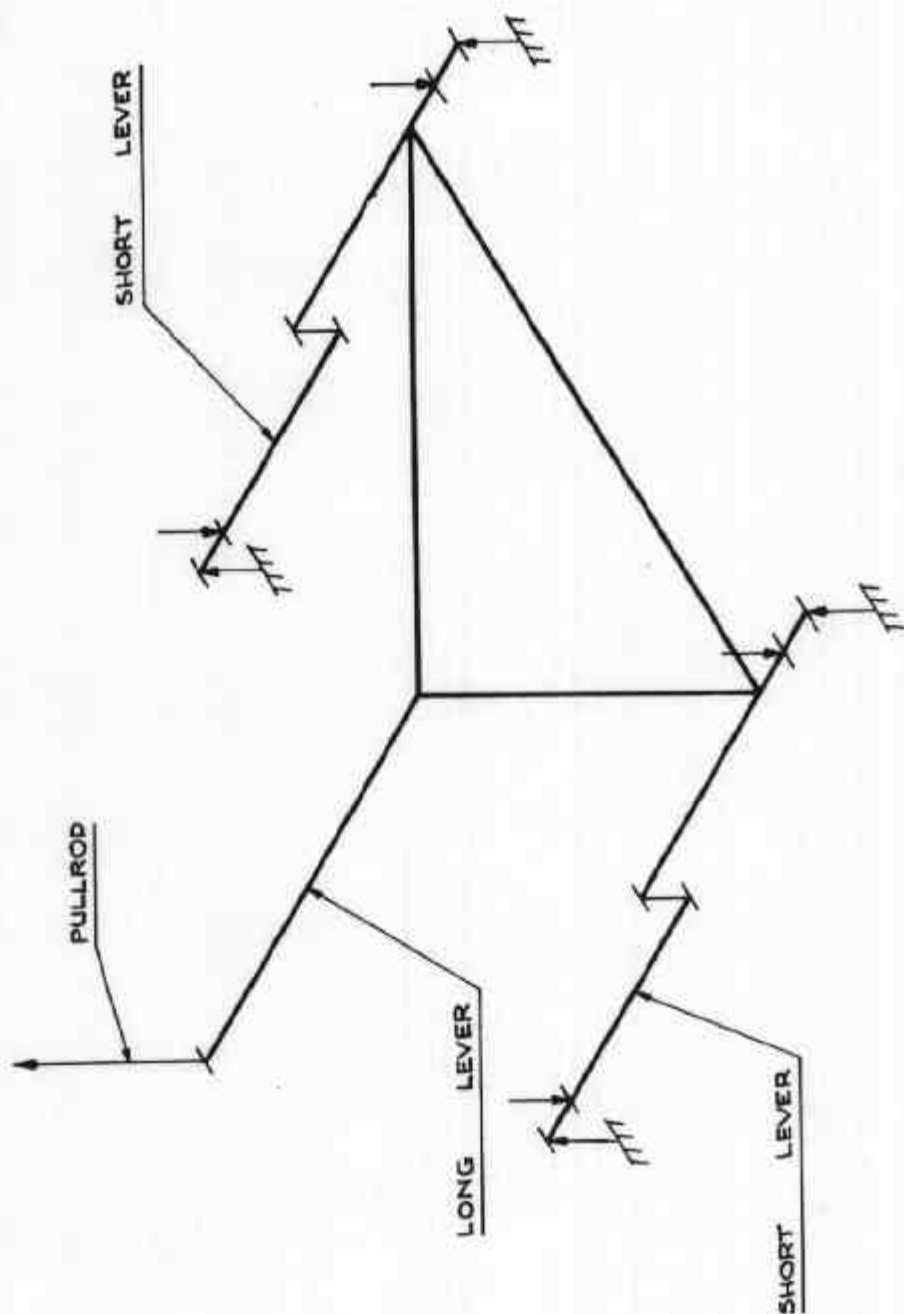
STOOL

LONG LEVER



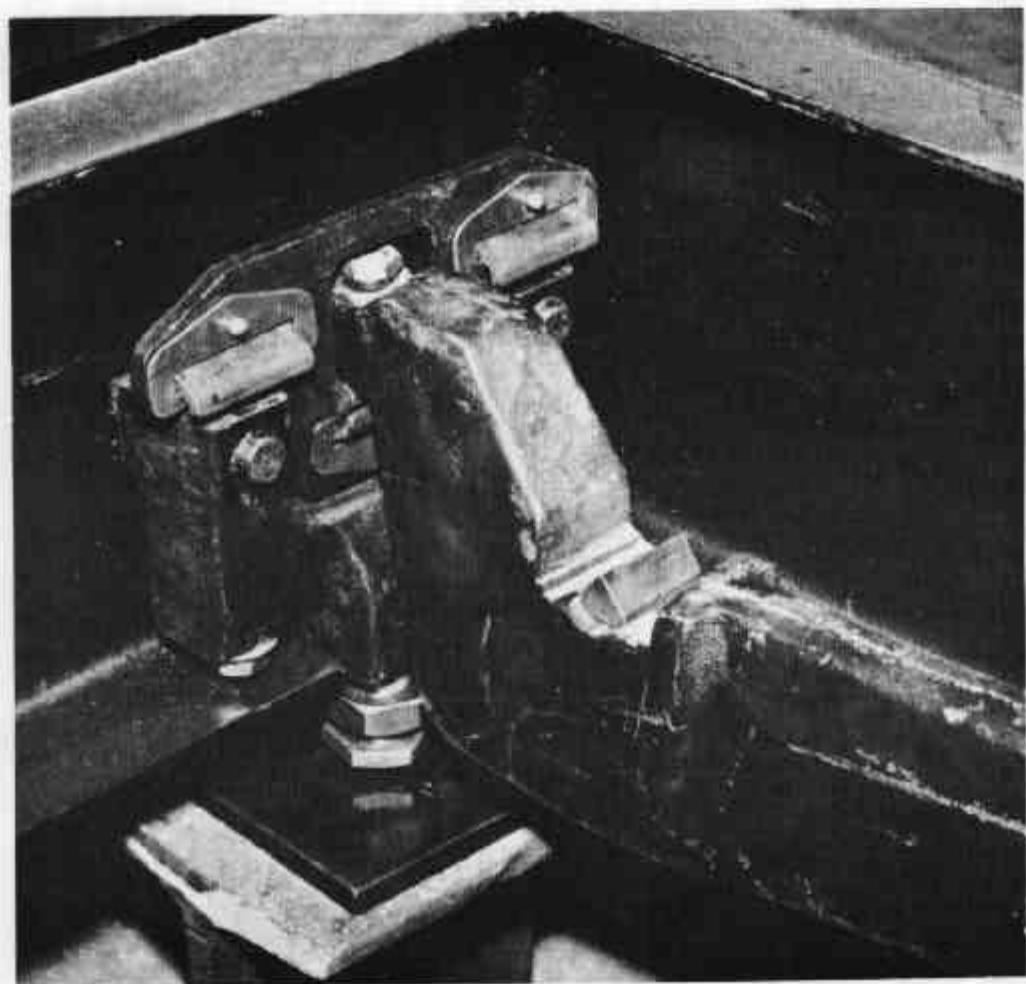
Three-lever System

FIGURE 6/9C/10 - 6



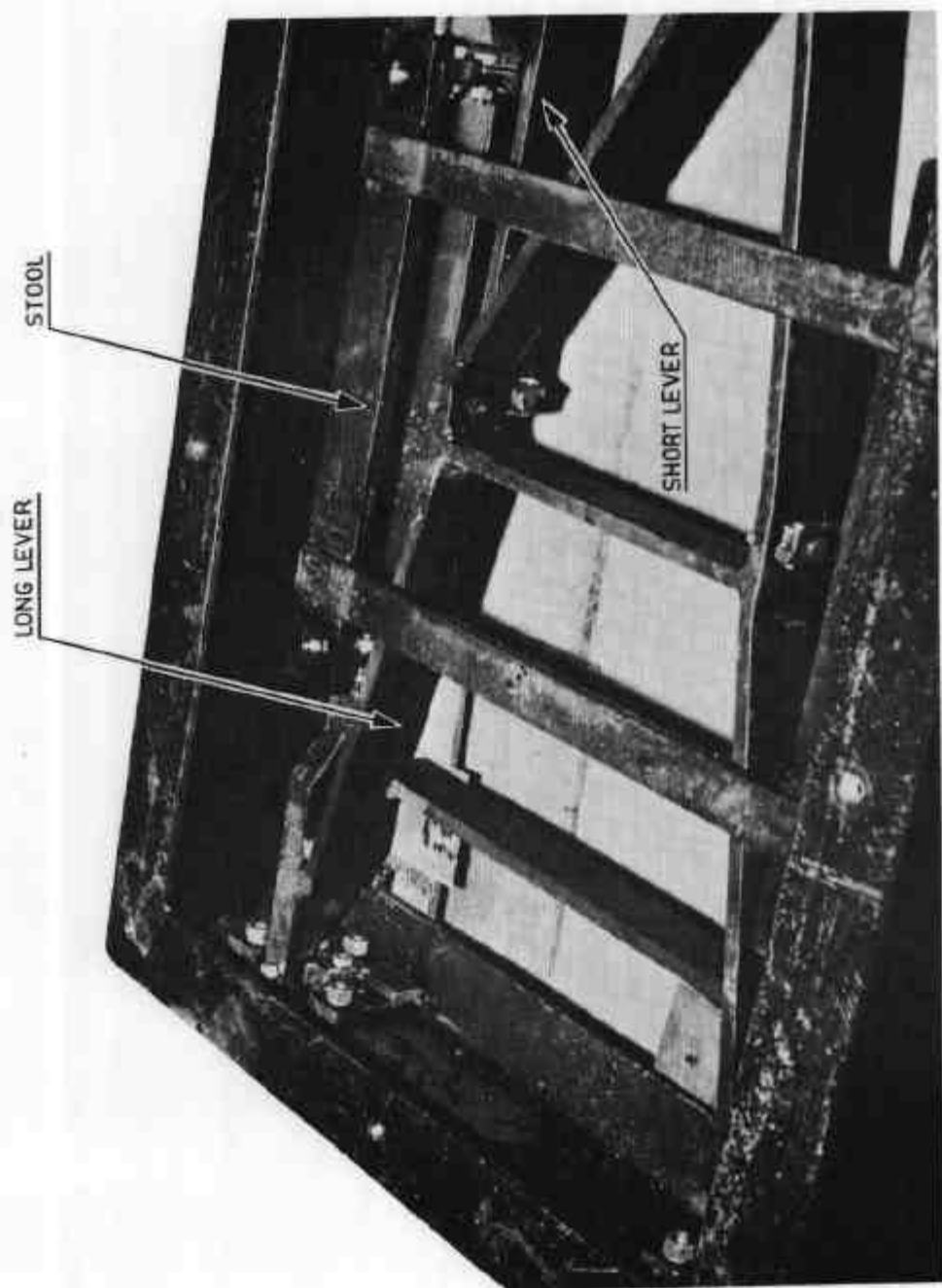
Three-lever System — Lever Diagram

FIGURE 6/9C/10 - 7



Swinging-link Lever Suspension

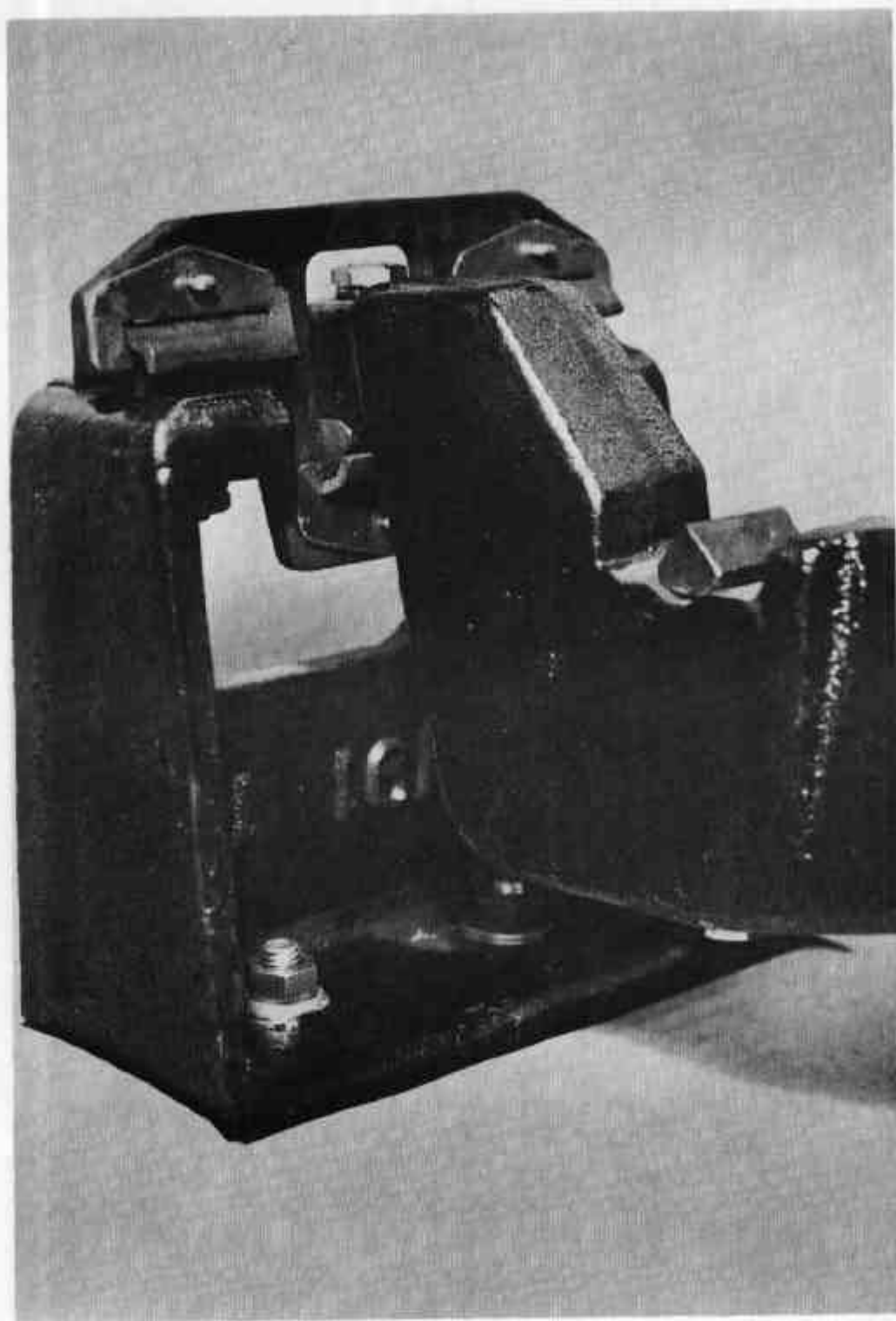
FIGURE 6/9C/10 - 8



Fixed Lever Suspension

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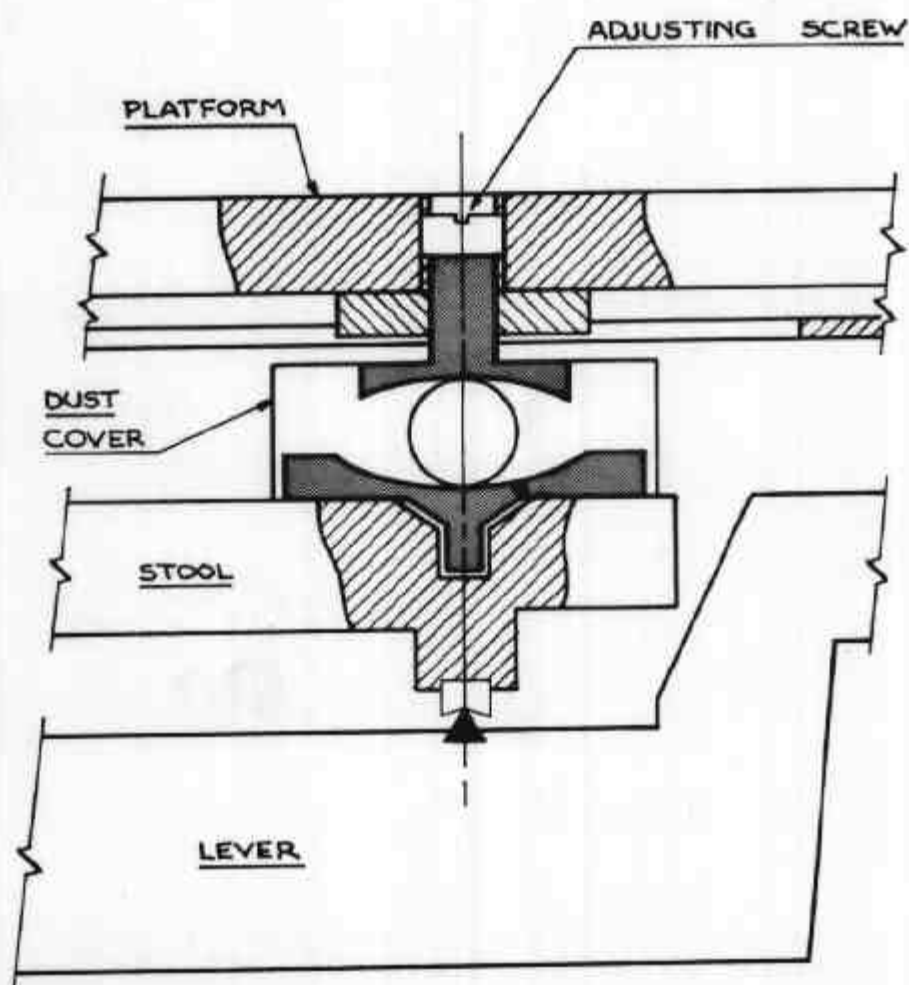
FIGURE 6/9C/10 - 9



Fixed Pedestal Support

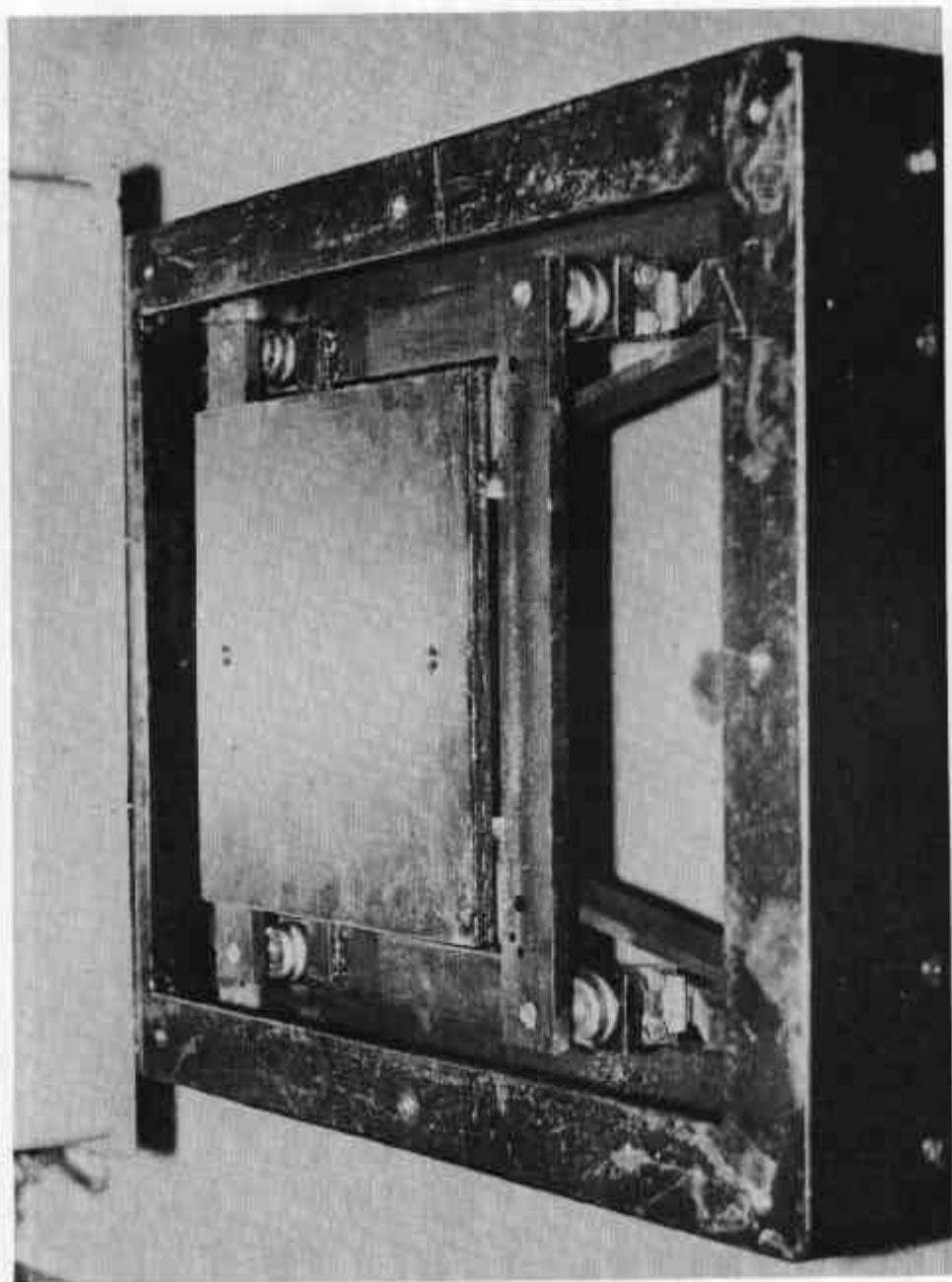
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FIGURE 6/9C/10 - 10



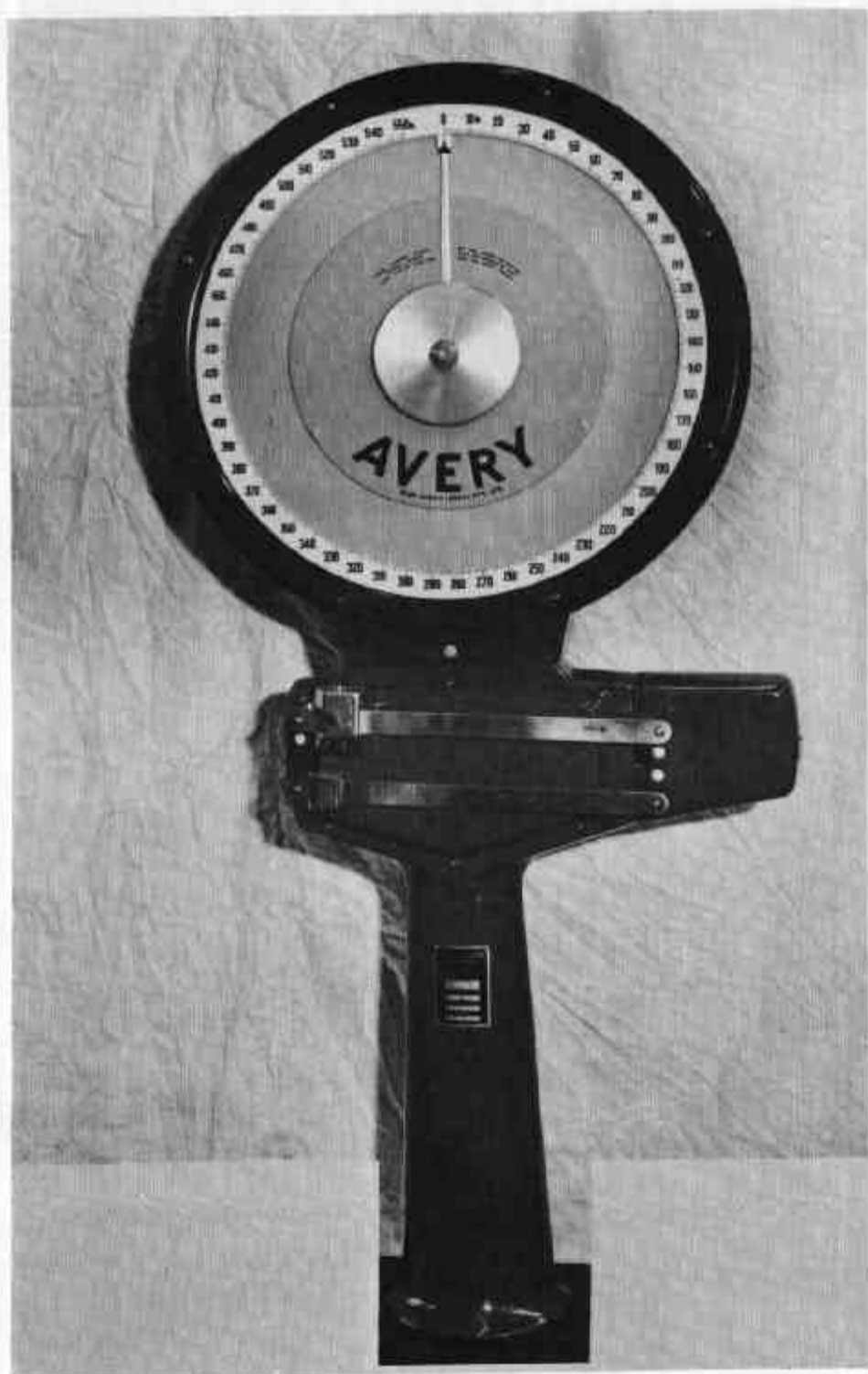
Ball-bearing Platform Support

FIGURE 6/9C/10 - 11



Shock-absorbing (Rubber) Platform Support

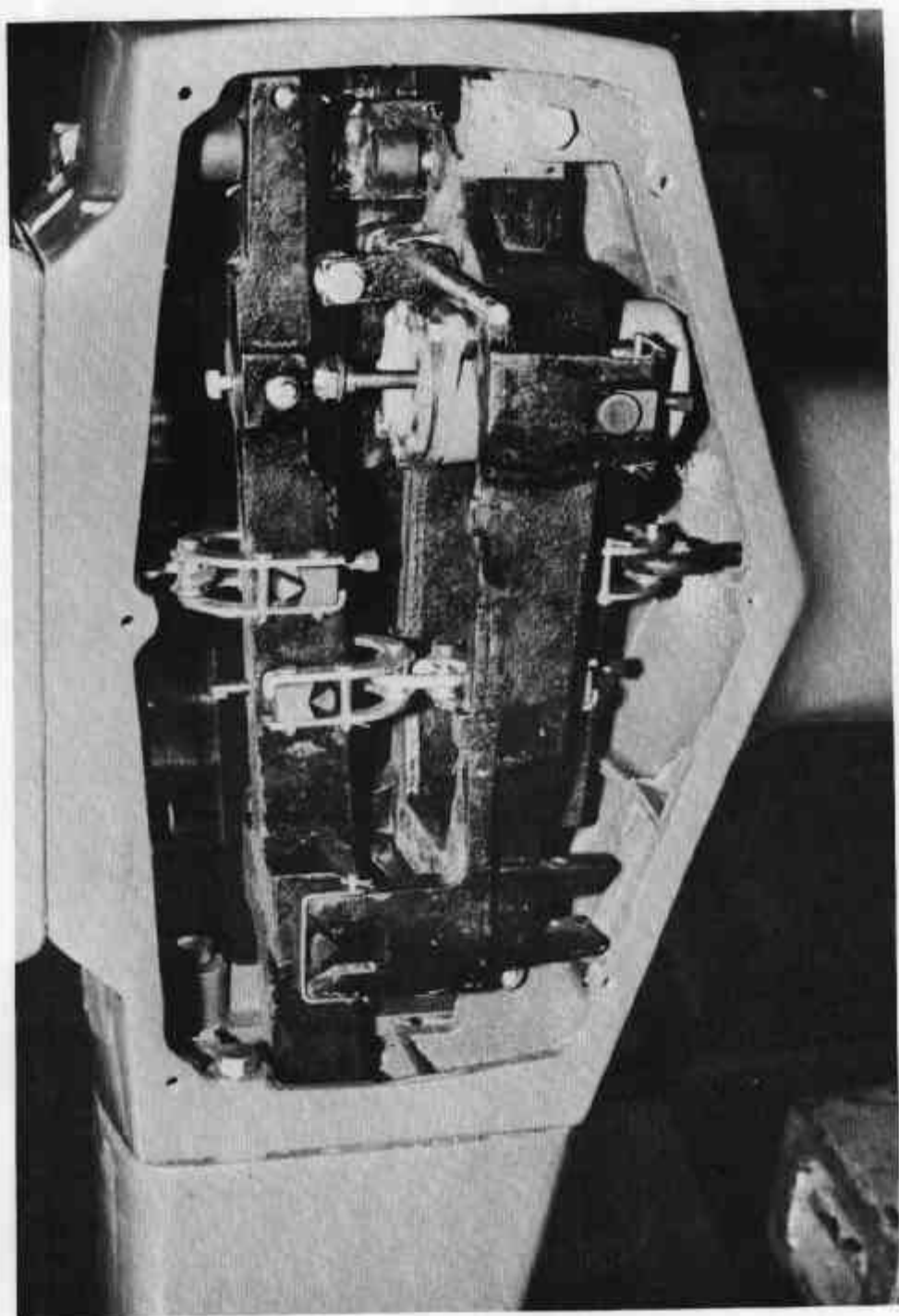
FIGURE 6/9C/10 - 12



Pillar Headwork

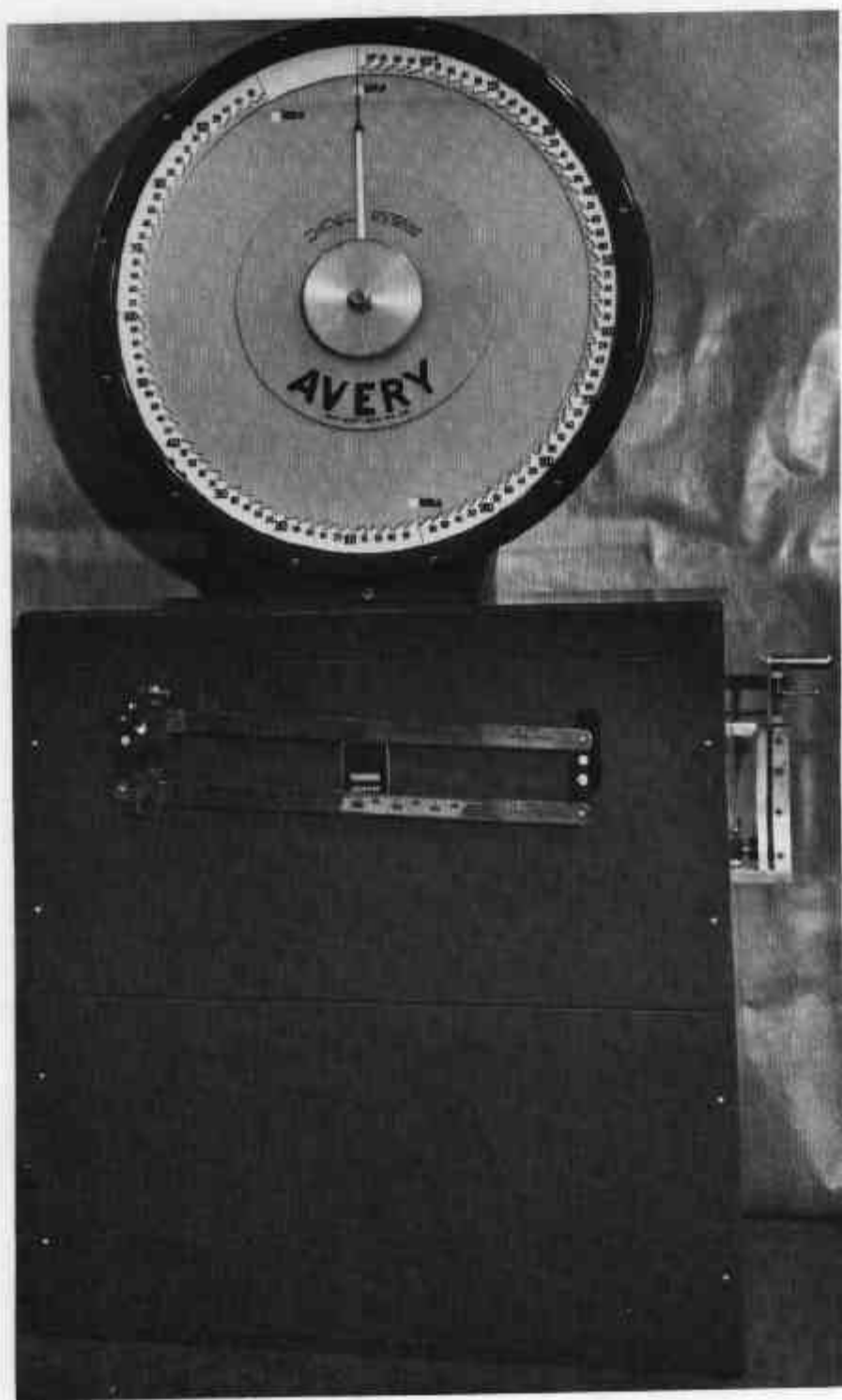
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FIGURE 6/9C/10 - 13



Pillar Headwork Levers (Back View)

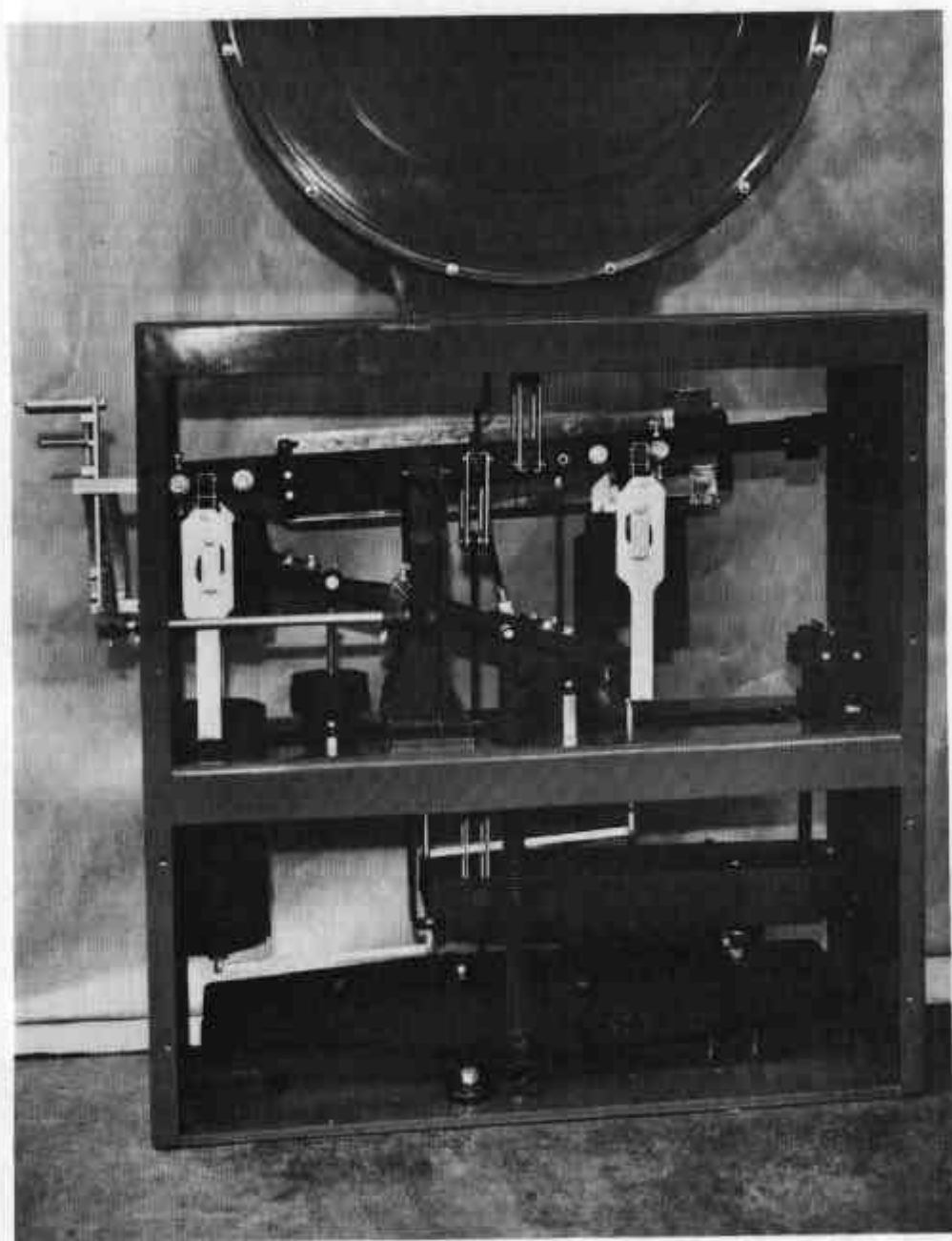
FIGURE 6/9C/10 - 14



Headwork Cabinet (Fabricated)

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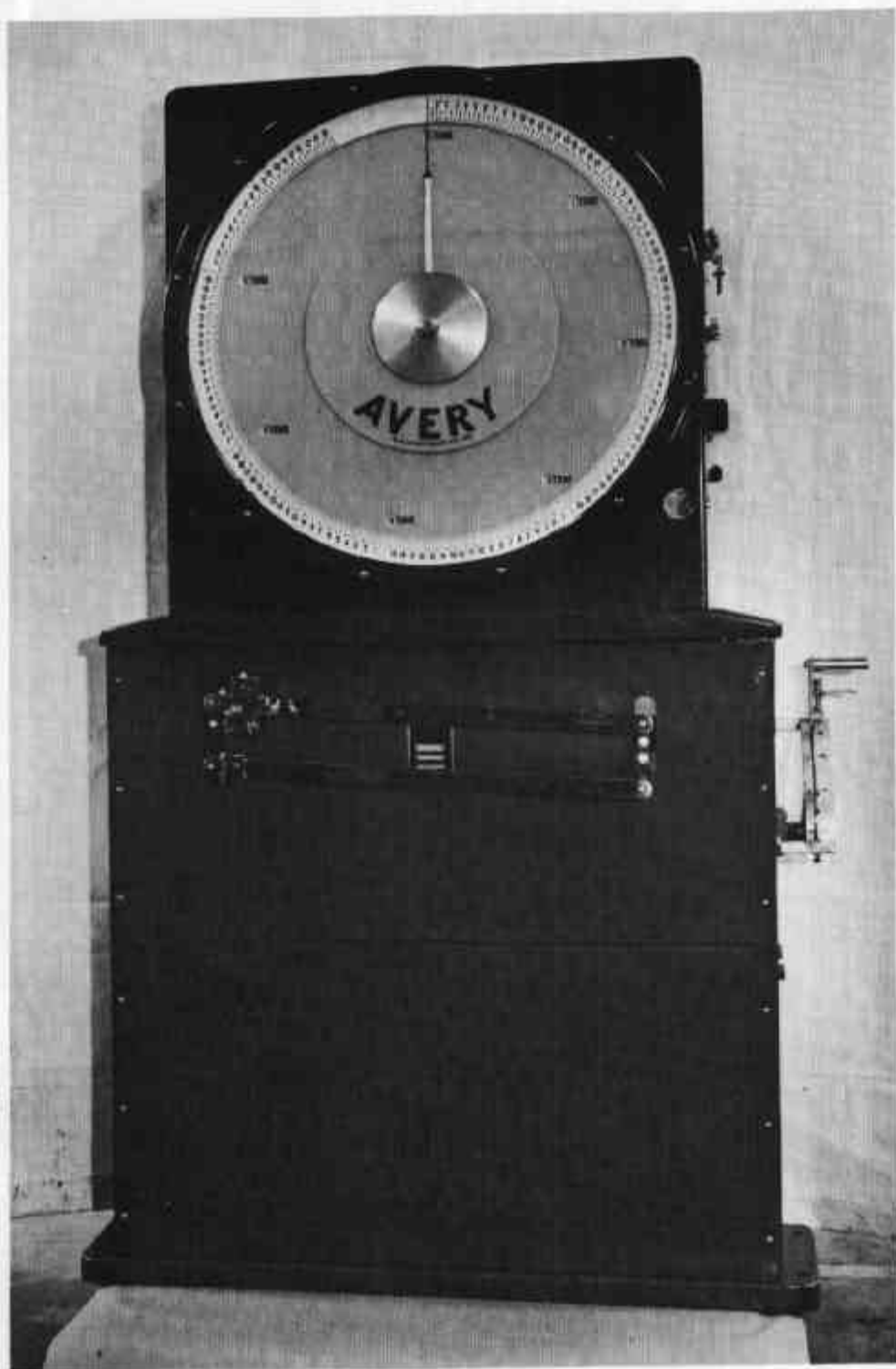
FIGURE 6/9C/10 - 15



Four-unit-weight Mechanism (Back View)

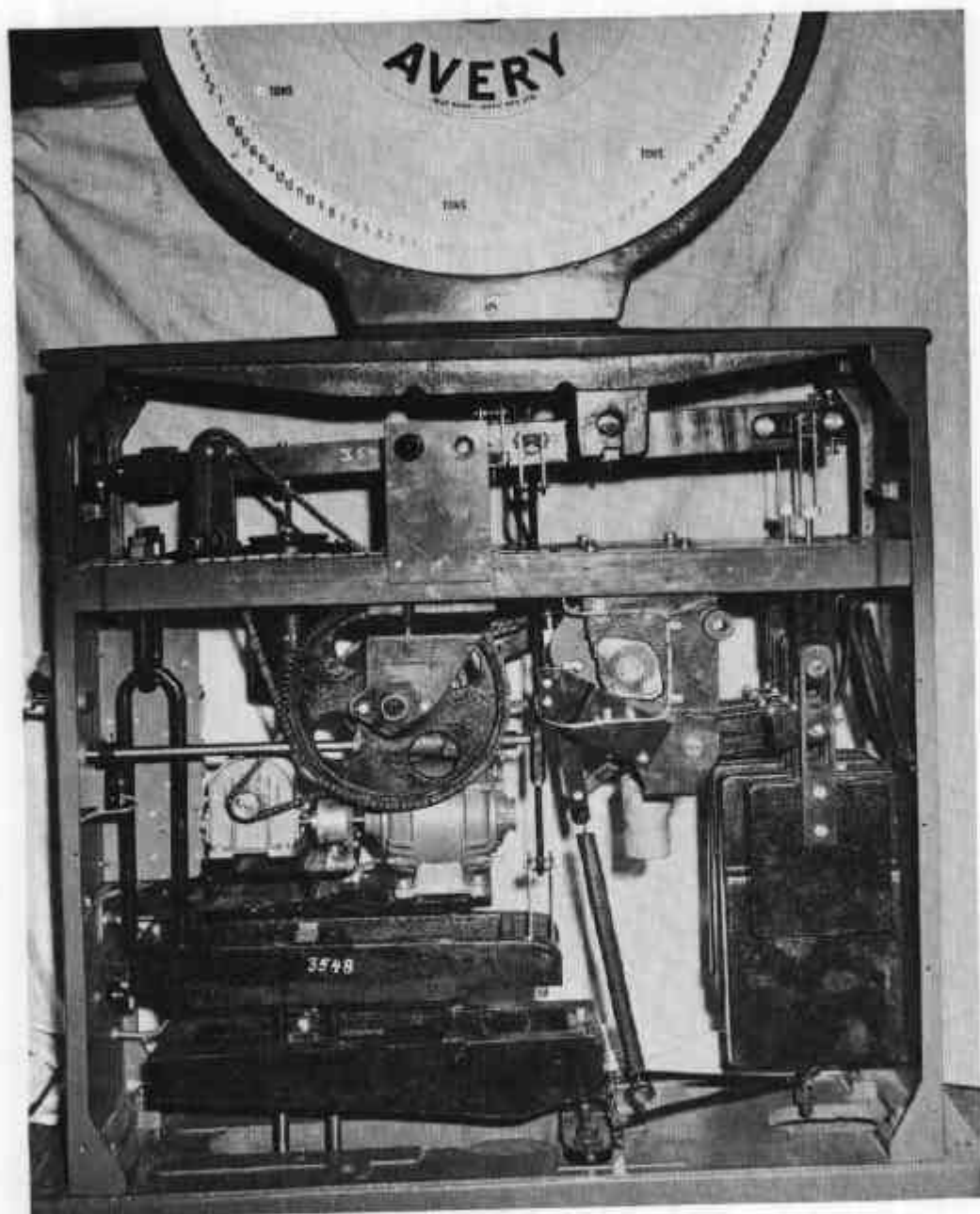
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FIGURE 6/9C/10 - 16



Headwork Cabinet (Cast-iron Frame)

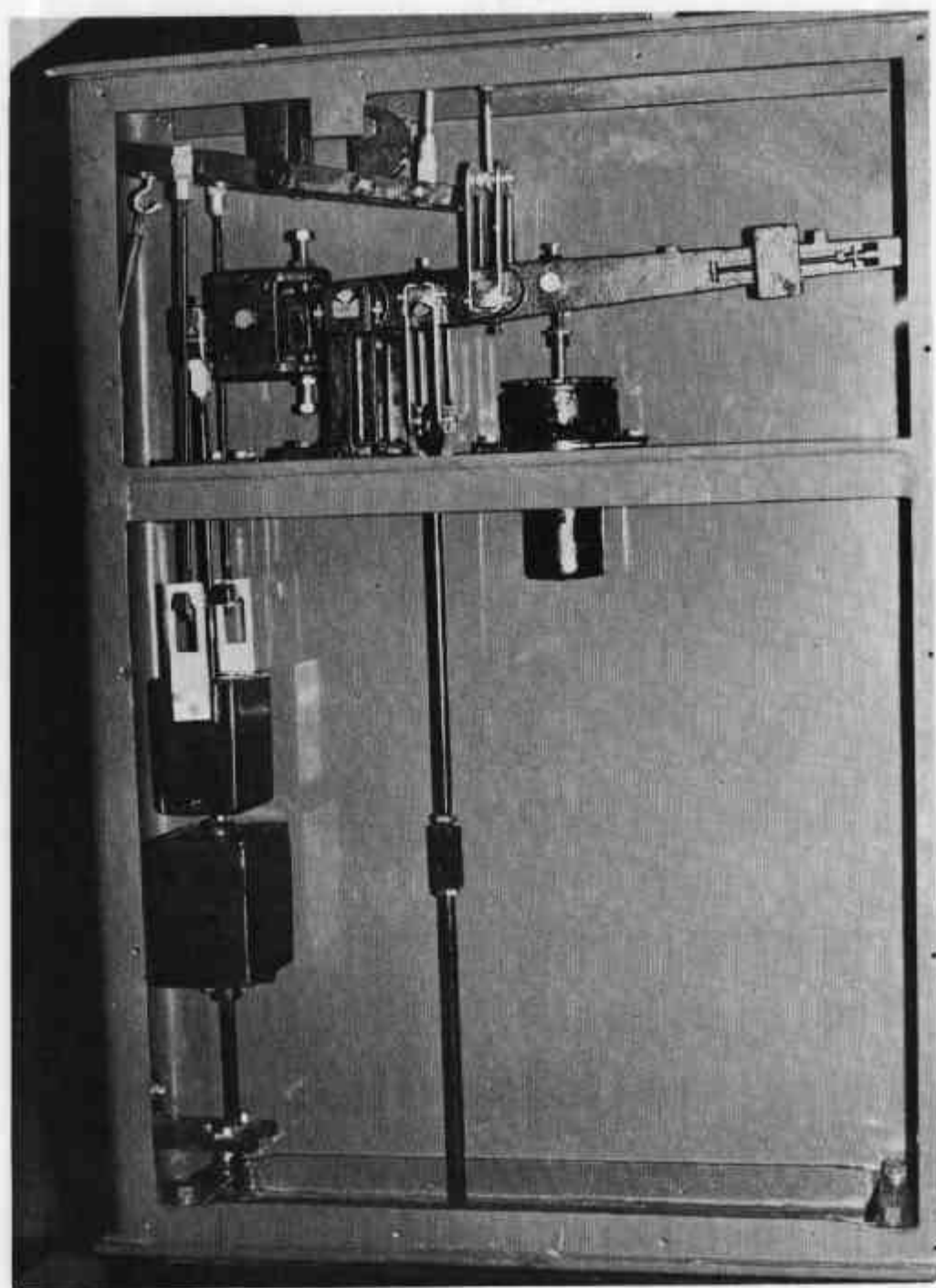
FIGURE 6/9C/10 - 17



Nine-unit-weight Mechanism

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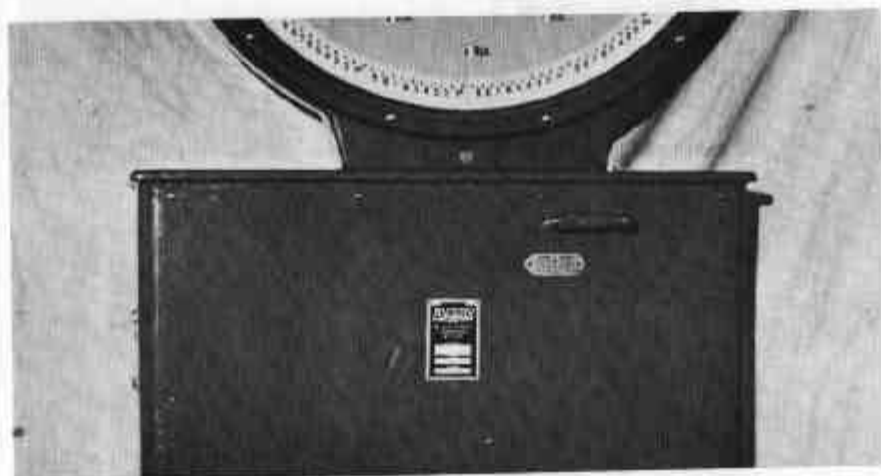
FIGURE 6/9C/10 - 18



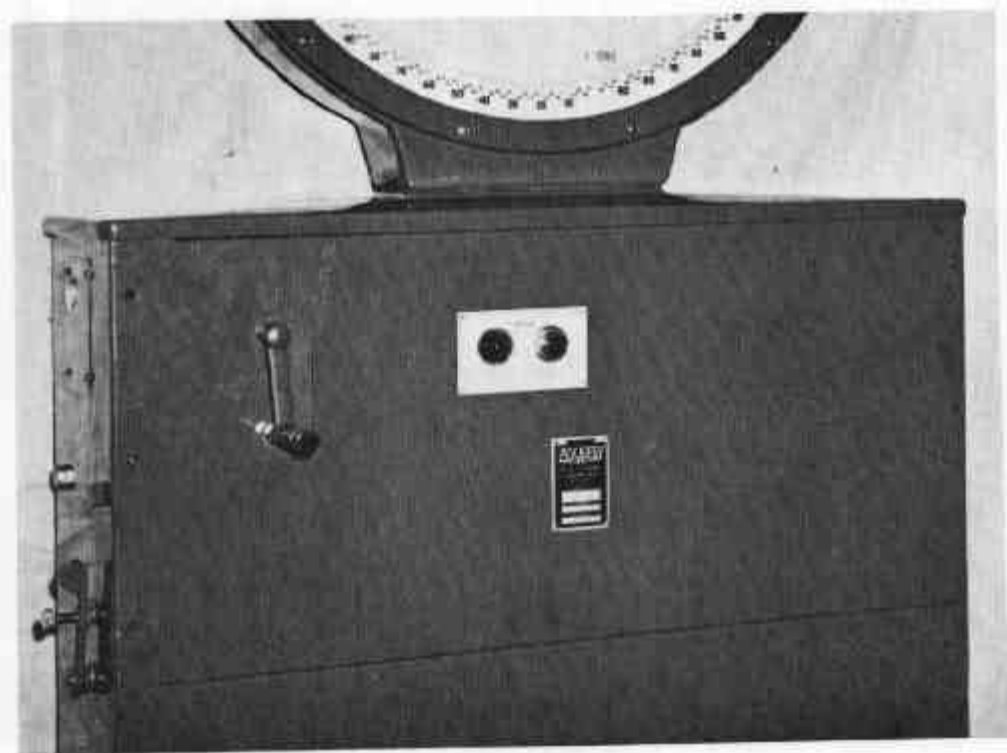
Single-unit-weight Mechanism (Back View)

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FIGURE 6/9C/10 - 19

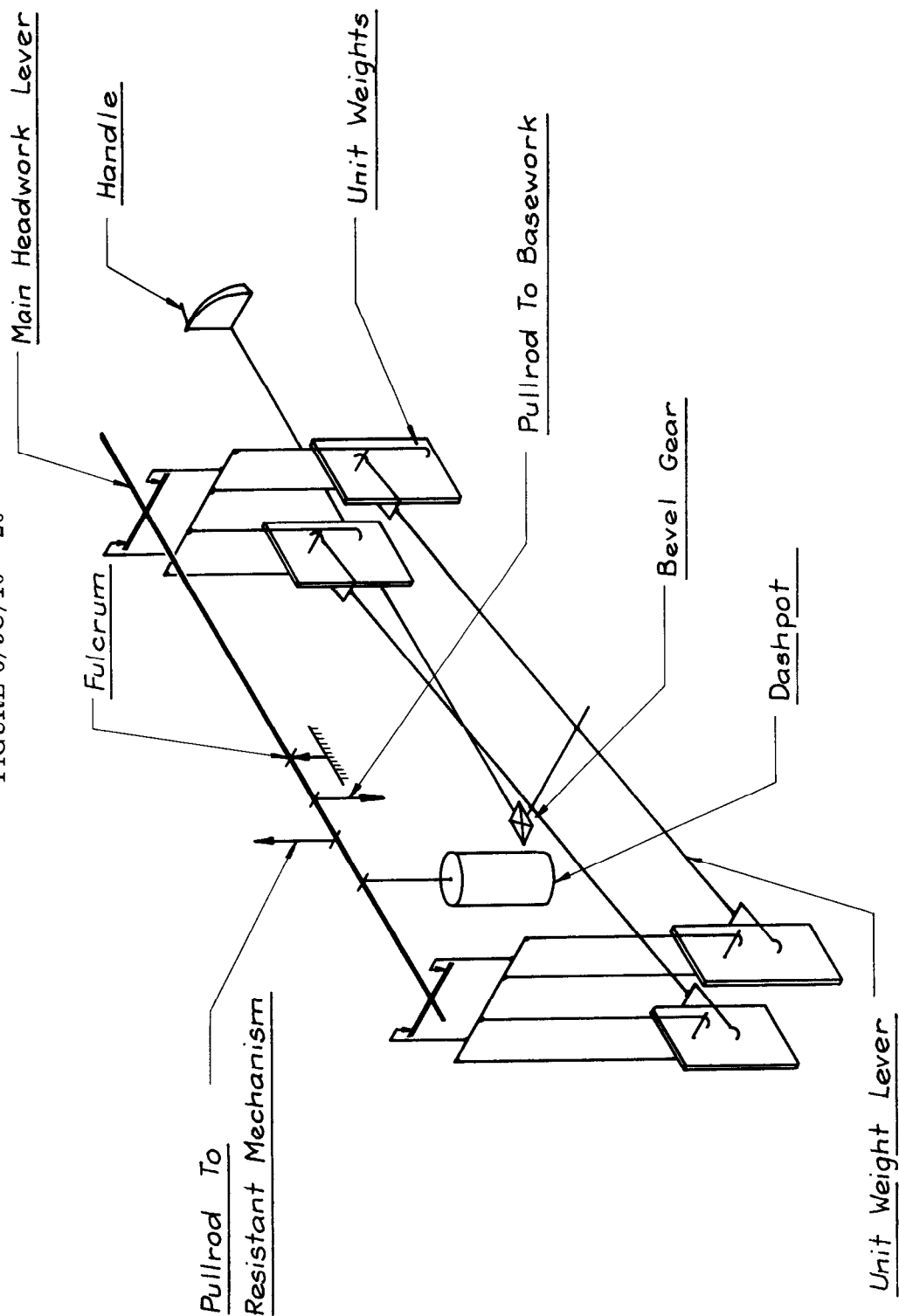


SINGLE-UNIT-WEIGHT MECHANISM



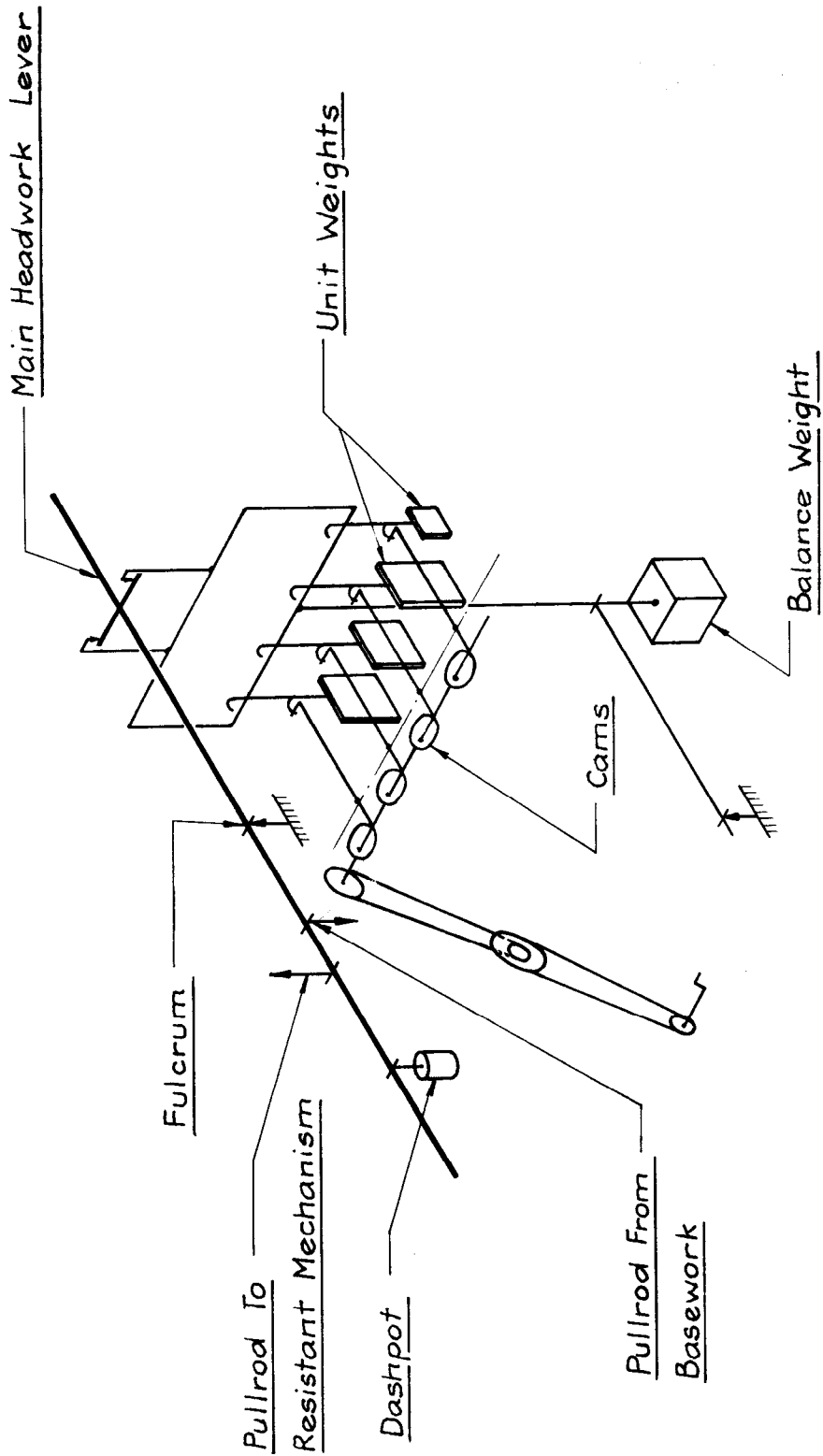
NINE-UNIT-WEIGHT MECHANISM

Unit-weight Operating Handles



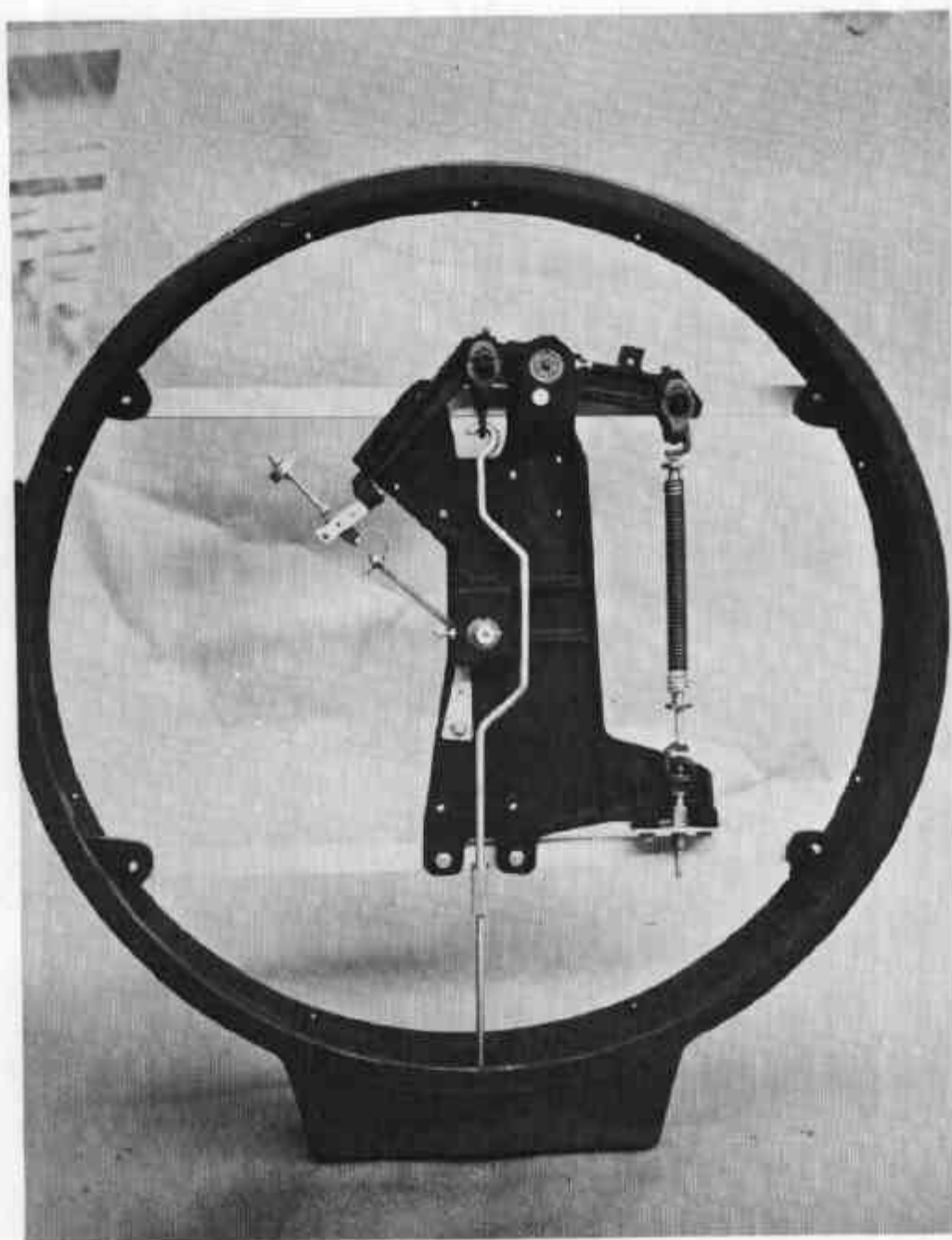
Four-unit-weight Mechanism — Schematic

FIGURE 6/9C/10 - 21



Nine-combination Unit-weight Mechanism

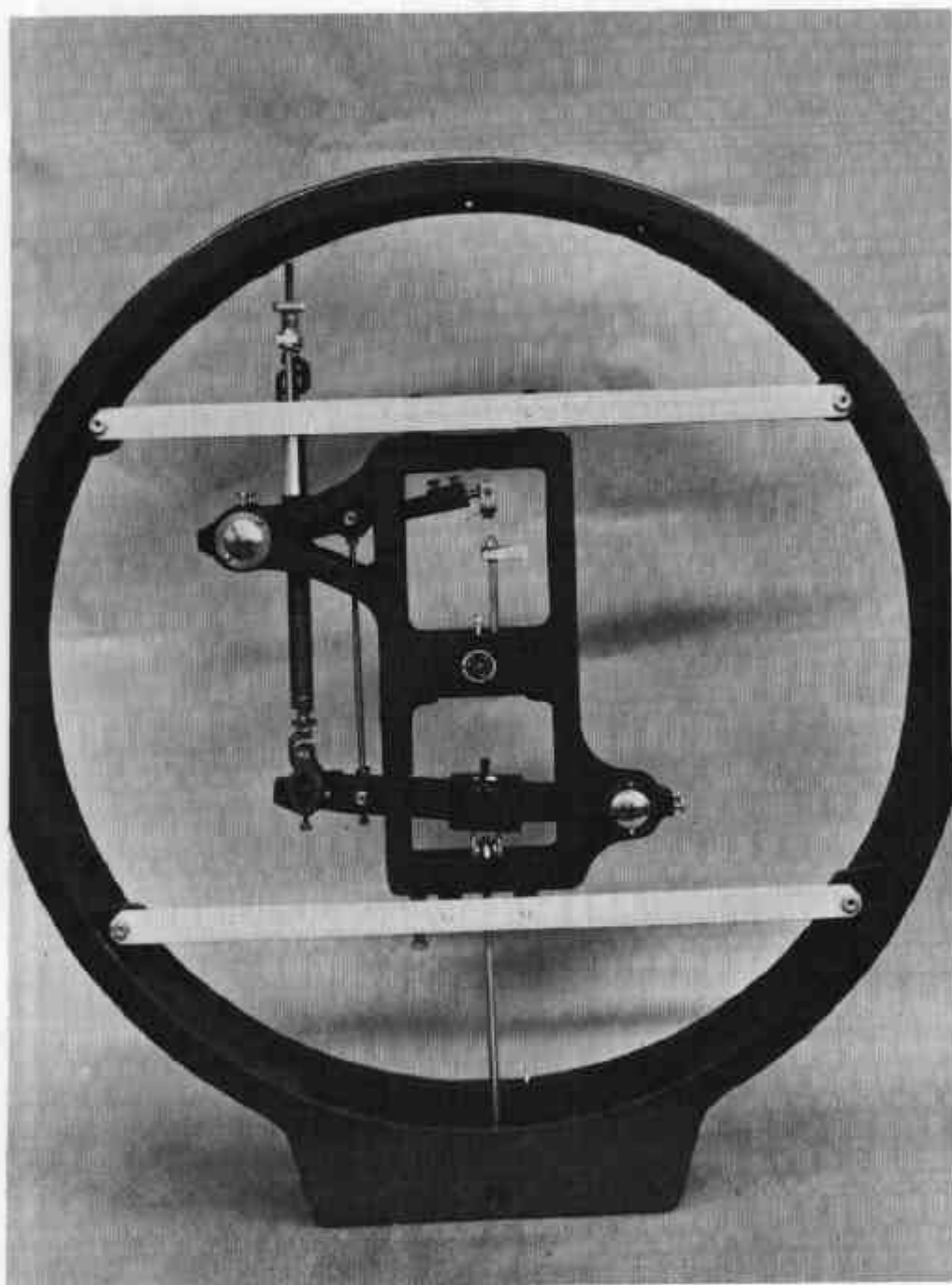
FIGURE 6/9C/10 - 22



CLA Spring-resistant Mechanism

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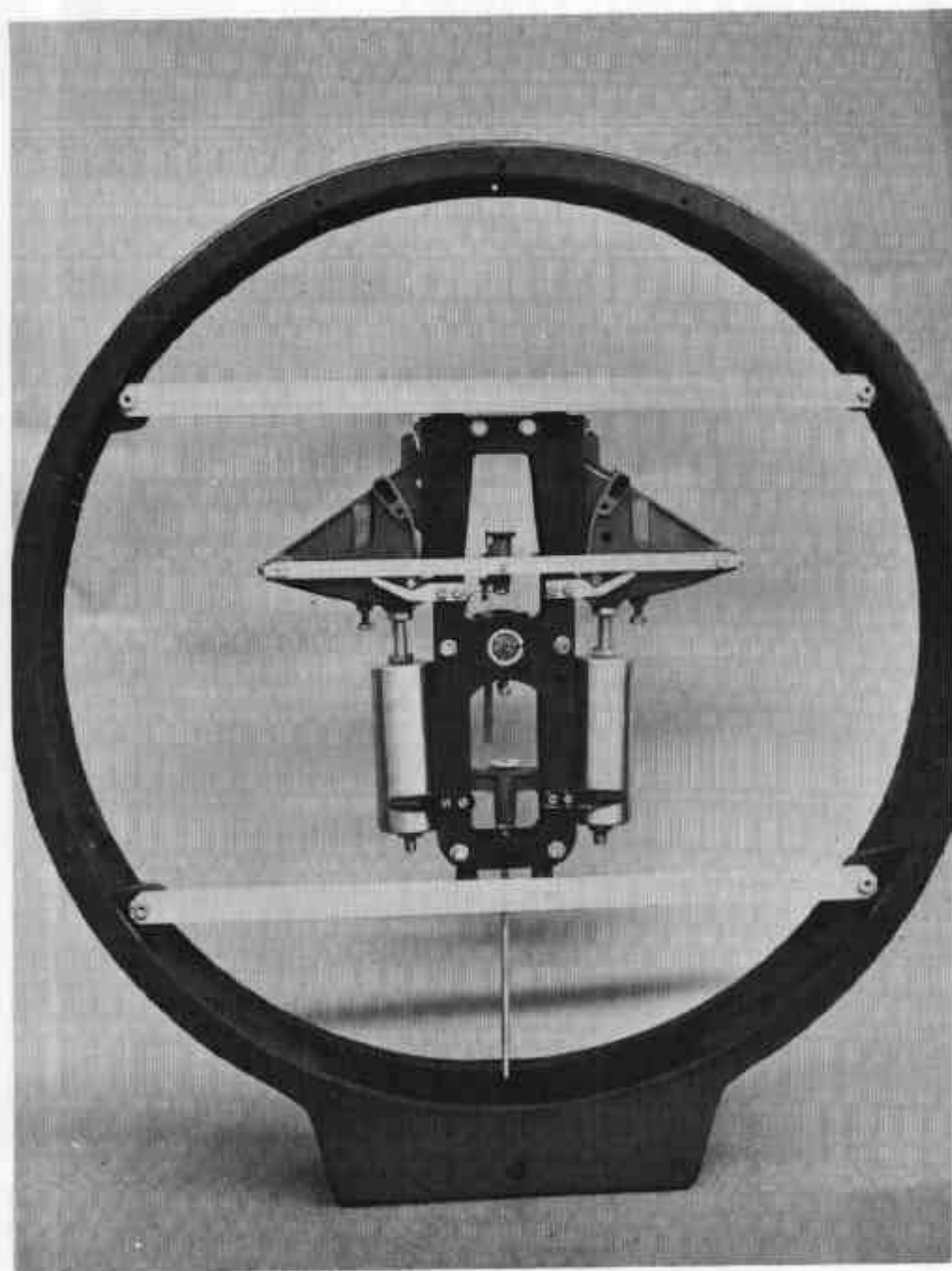
FIGURE 6/9C/10 - 23



CFA Spring-resistant Mechanism

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FIGURE 6/9C/10 - 24

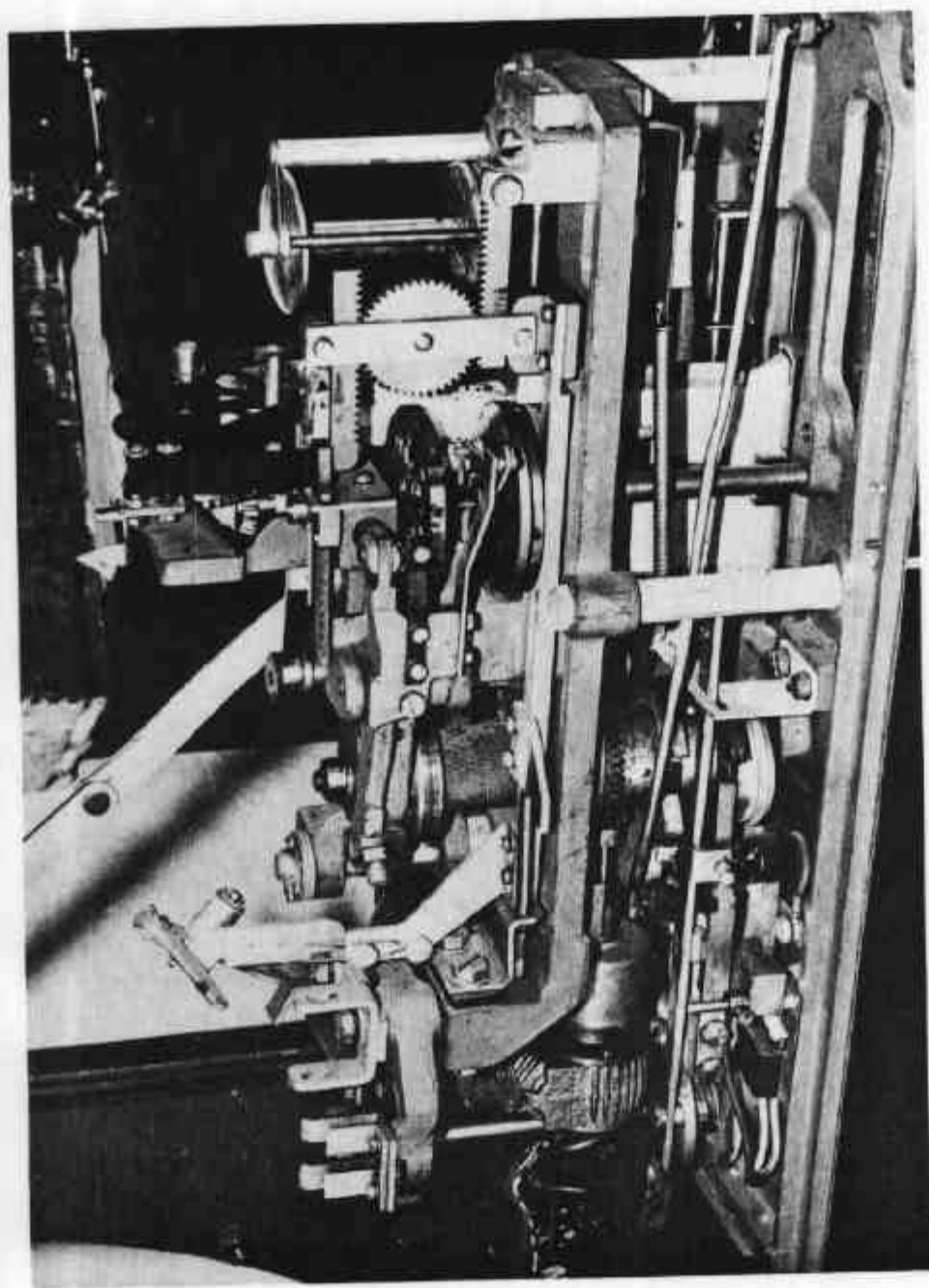


CGA Double-pendulum Resistant Mechanism

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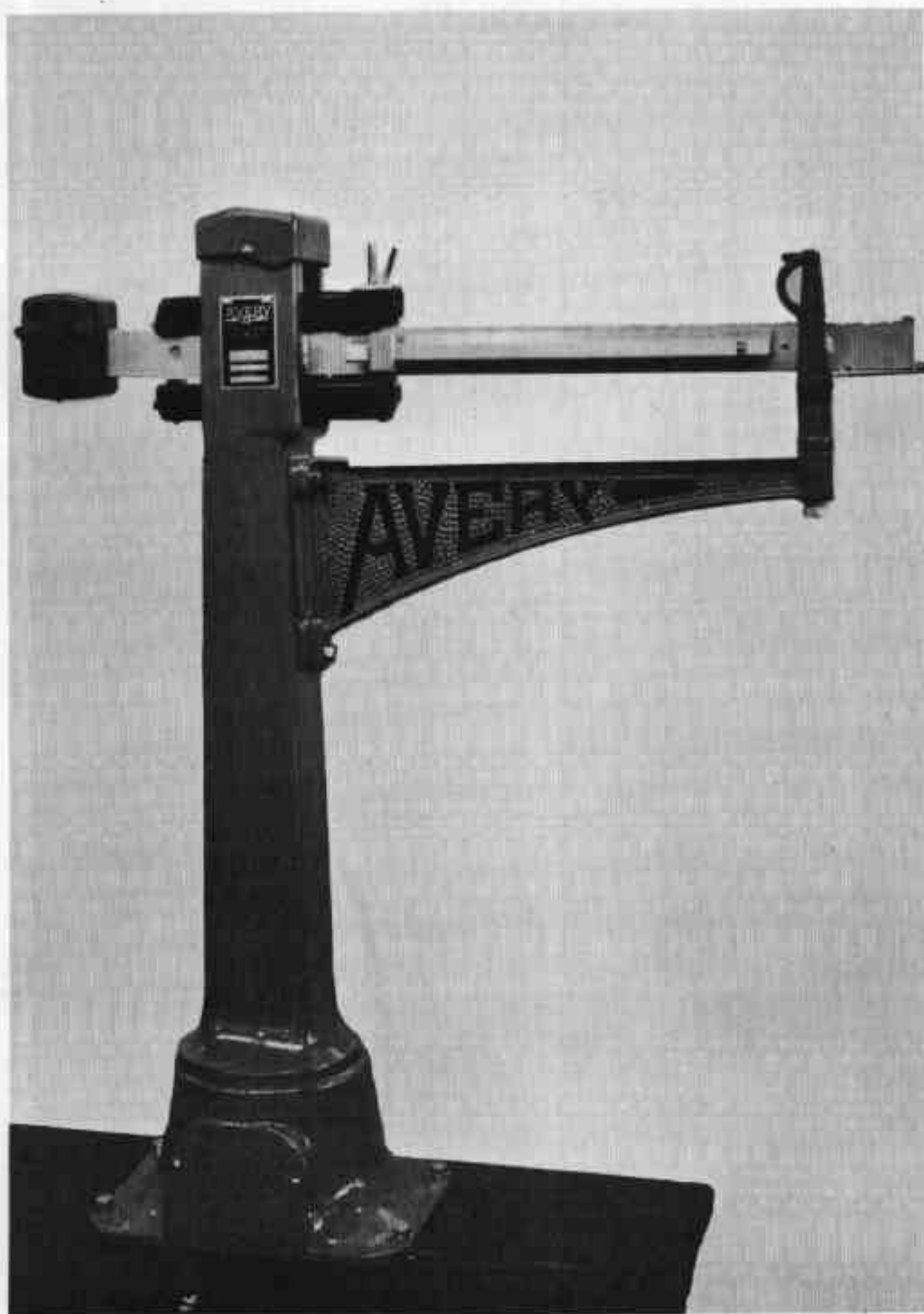


Ticket Printer

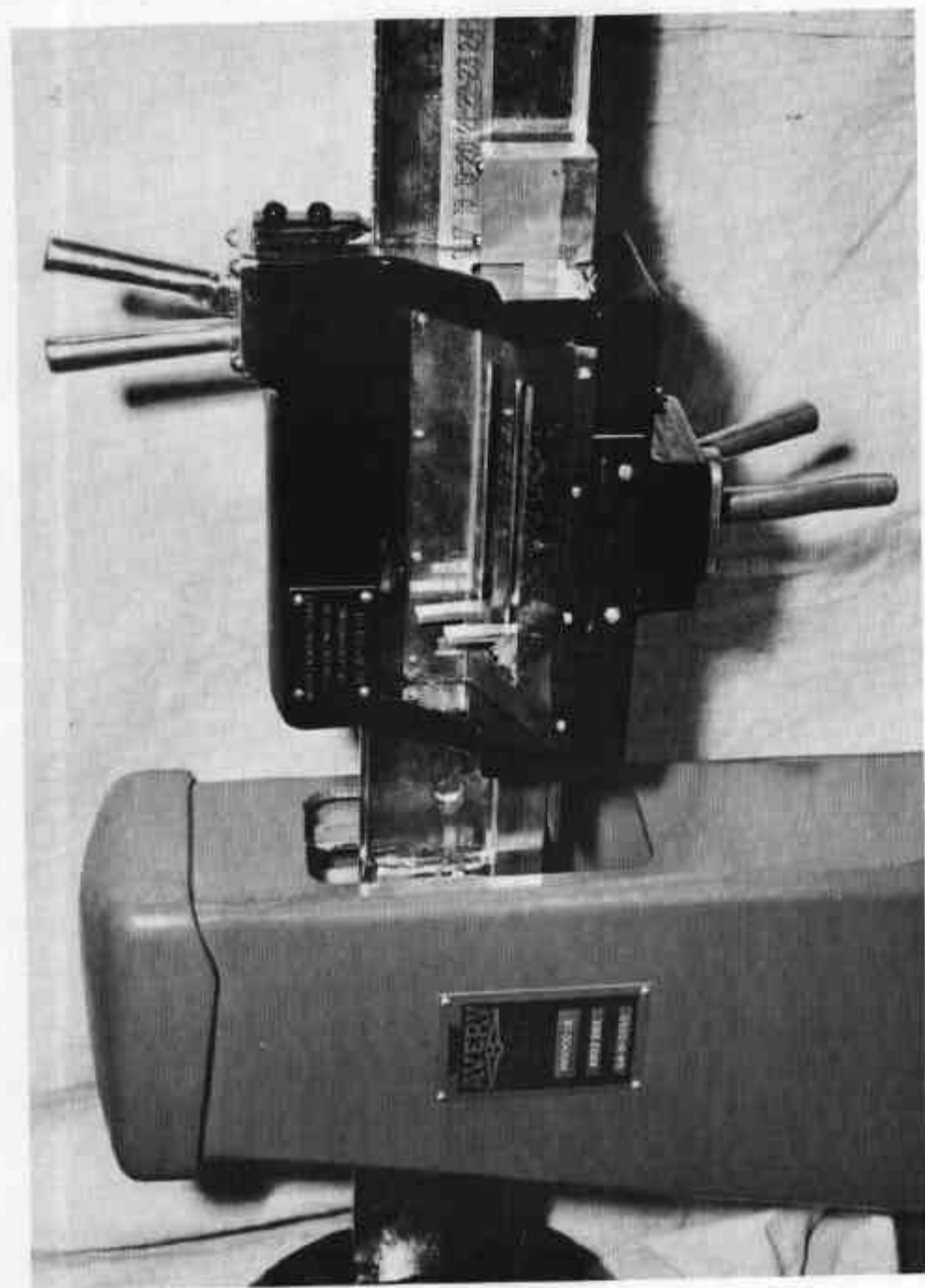


Ticket-printing Mechanism

FIGURE 6/9C/10 - 27

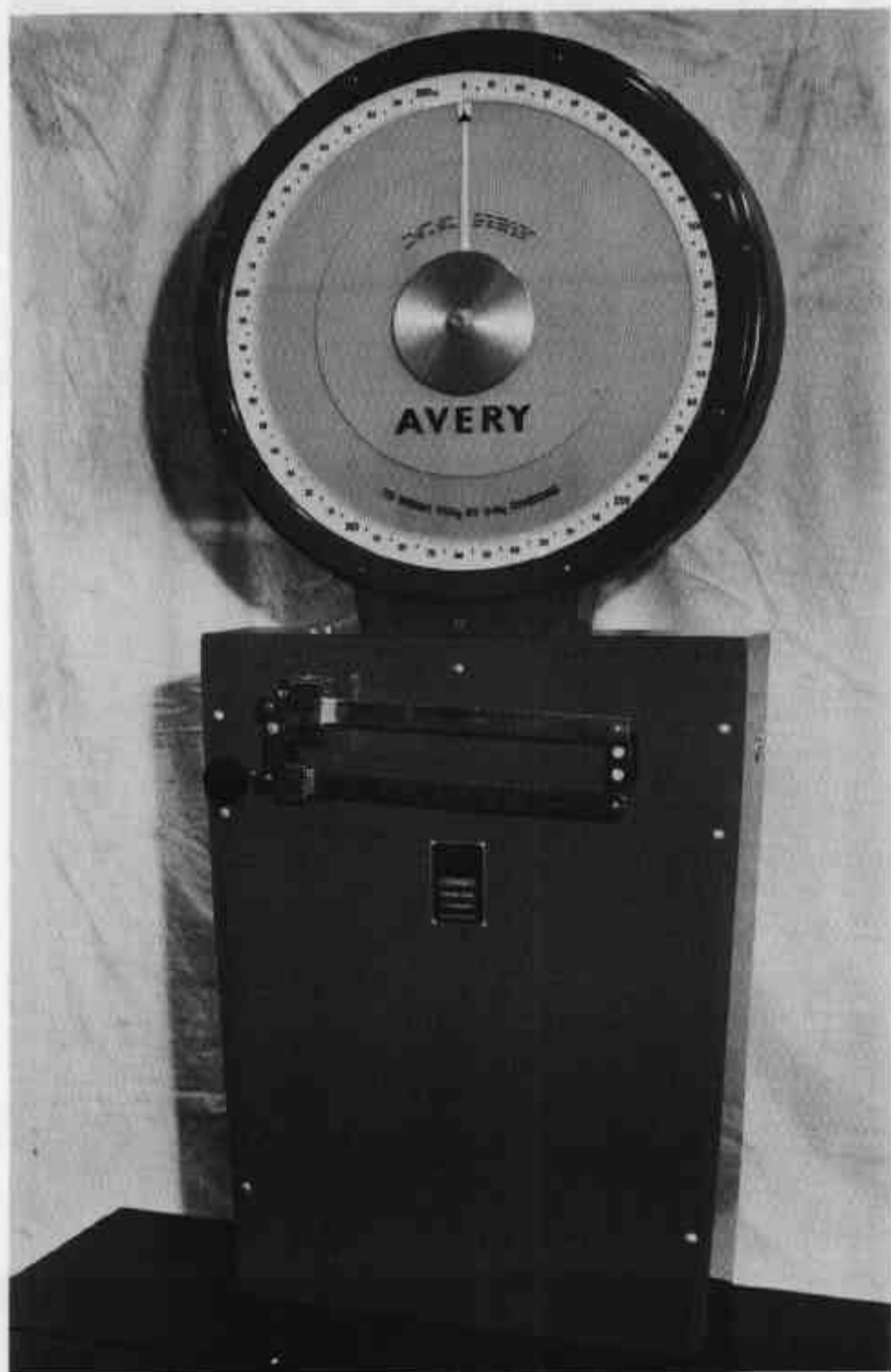


Full-capacity Steelyard



Full-capacity Steelyard and Ticket-printing Poise

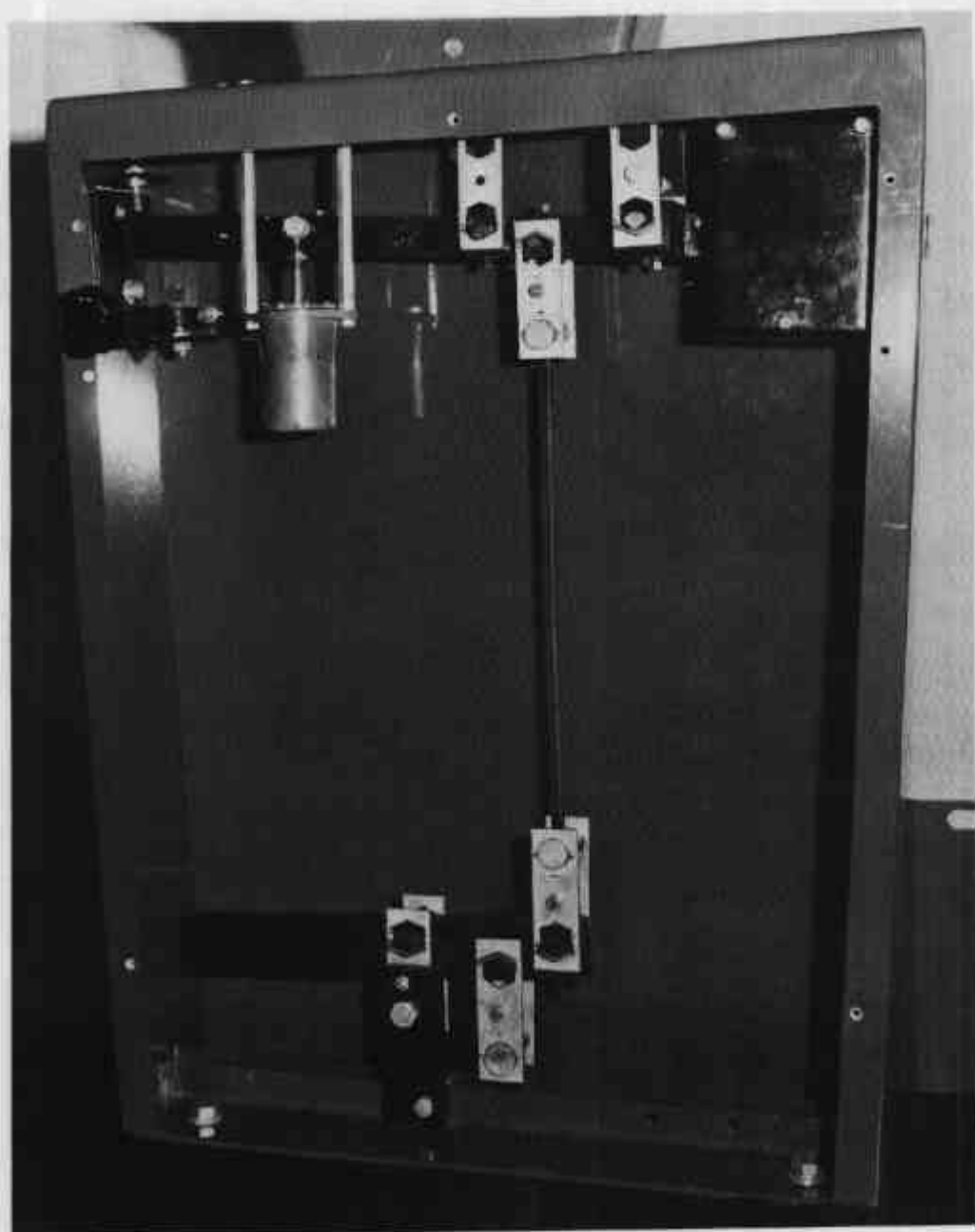
FIGURE 6/9C/10 - 29



Avery 4793 Fabricated Headwork

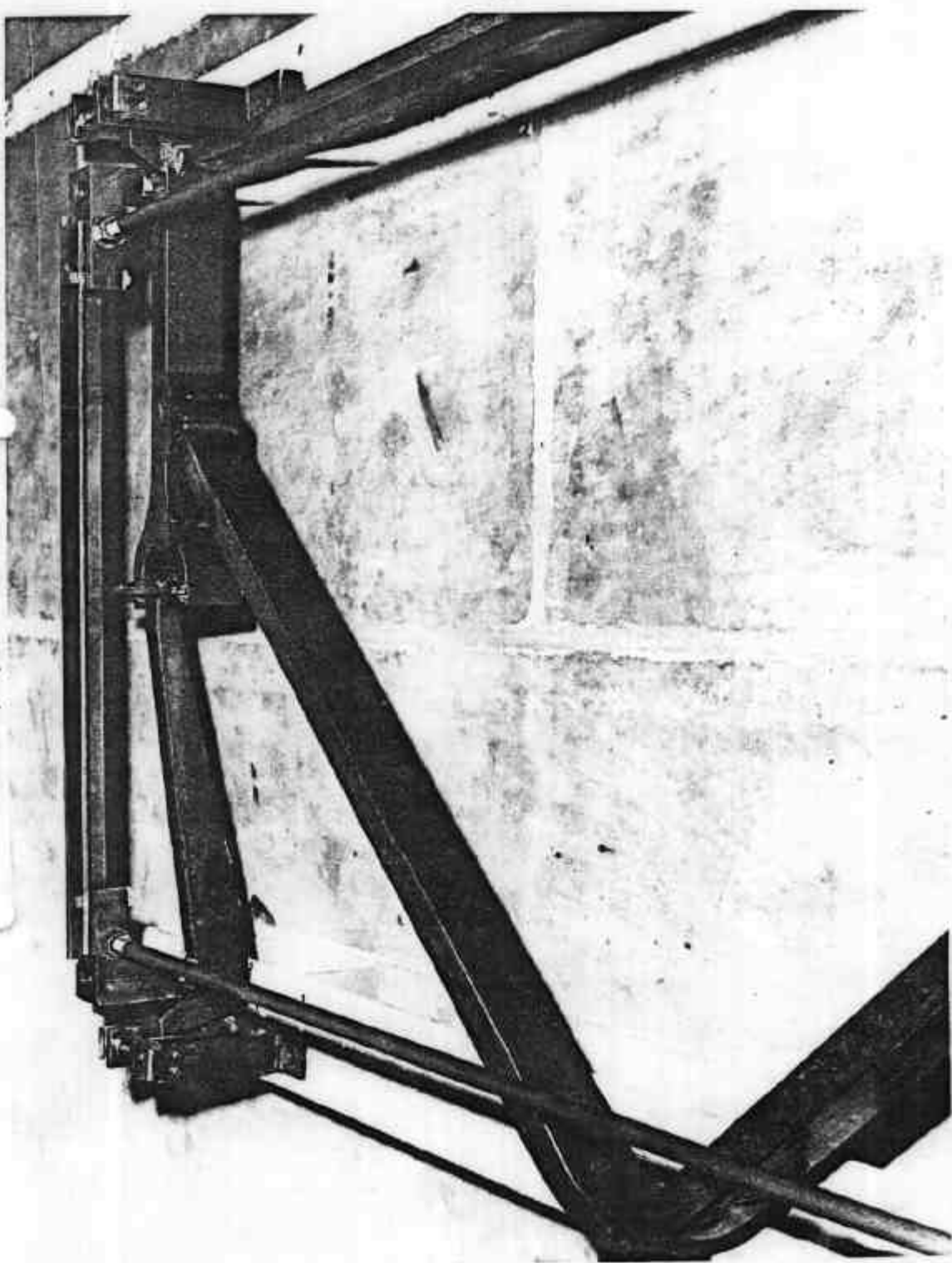
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FIGURE 6/9C/10 - 30



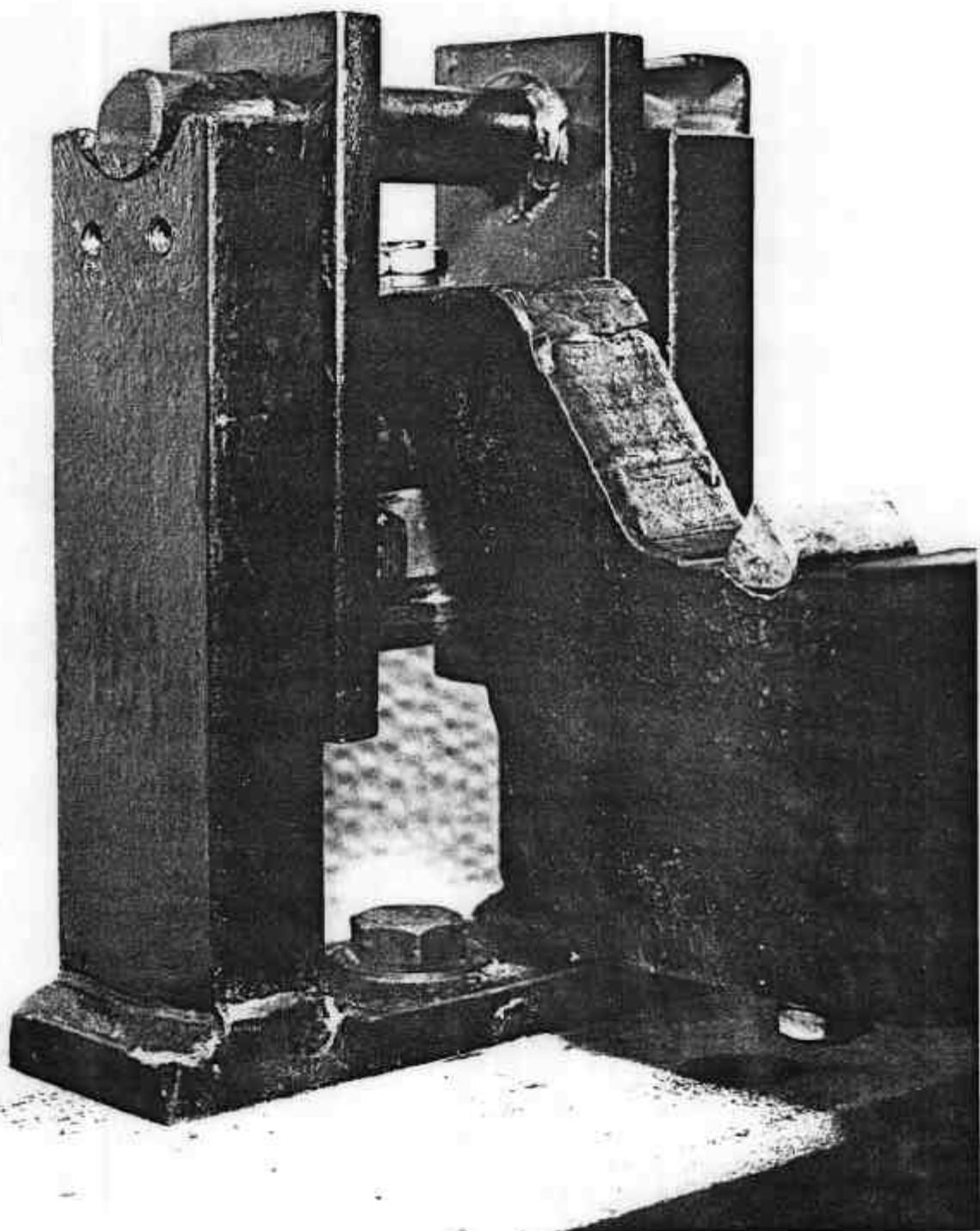
Avery 4793 Fabricated Headwork Levers

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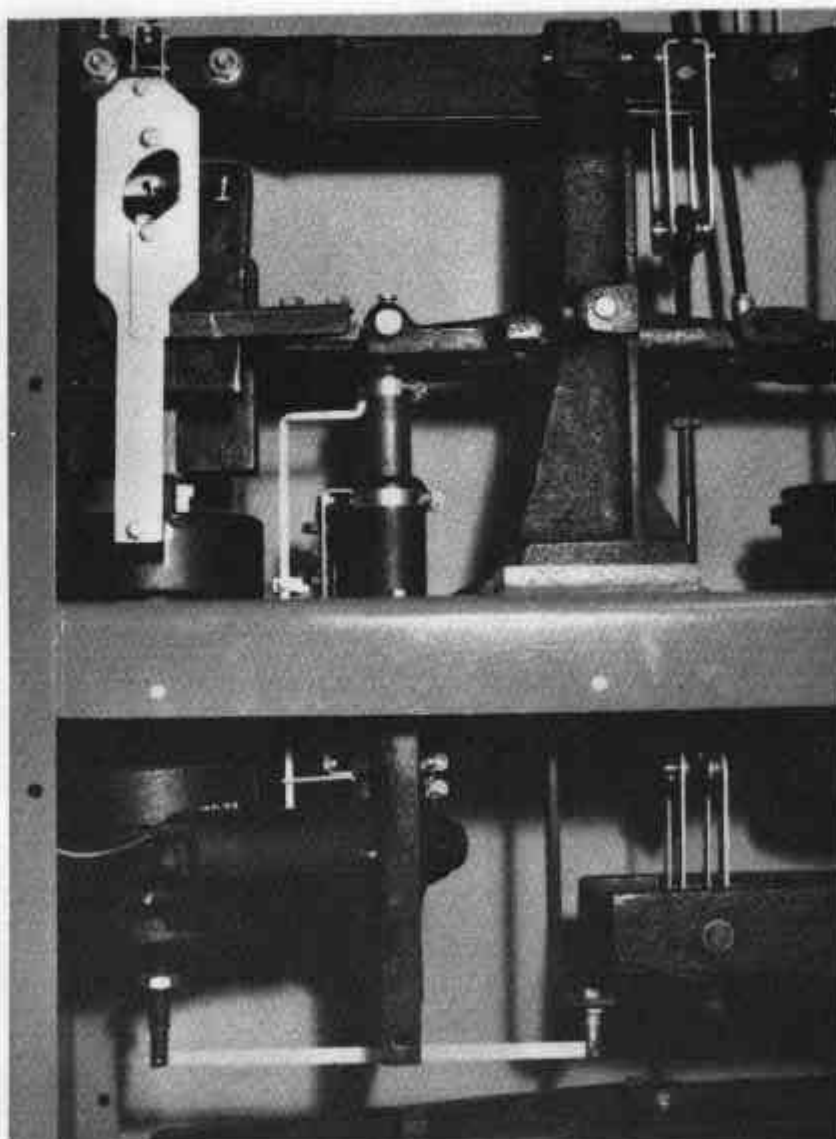


Fabricated Three-lever Basework

FIGURE 6/9C/10 - 32



Fabricated Pedestal and Support Link



Unit-weight Selector — Electrically Driven Linear Actuator