PART VIII

LUBRICATION

LUBRICATION GENERAL

It is essential to keep Commercial Controls Flexowriters and Justowriters in the best operating condition for customer satisfaction. Therefore, to aid in reducing service calls, it is very important that all moving parts be properly lubricated at regular intervals.

The lubrication of machines involves the use of the correct lubricant applied in the proper amount, and at frequent enough intervals to prevent rust and excessive wear. Lubricants added in excess may flow or drip to parts which may be damaged by oil or grease. For example, if oil was allowed to drip on the writing machine power roll, the cams would most likely fail in operation and in time, the roll itself would become damaged. On the other hand, insufficient lubrication will result in excessive wear and machine failure. Incorrect lubricants will be ineffective and may actually damage some parts. An example of this is an oilite bronze bearing which is porous and may become clogged and run hot if the wrong lubricant is applied.

The following sections contain a detailed description of all points of lubrication on the various mechanisms of the Flexowriter and Justowriter. The numbers in each figure indicate the type of lubricant to use at a specific point. These numbers and their associated lubricants are listed below.

CC Lubricant Number	General Description	Approved Source	Lubricants Name
1	A light oil which has good lubricating and rust preventative properties.	Shell Oil Co.	Shell Tellus Number 27
2	For all porous metal bearings.	Esso	WS - 1170
4	A light grease containing lethium. Good adherent properties.	Lubrication Inc.	Lubgrease L-2
6	A grease of light consistency which contains oxidation resistant additives and provides good lubrication without excessive channeling.	Shell Oil Co.	Retinax "T"

Note: CC No. 3 contains 2% colloidal graphite No. 1104 in Shell Vexilla L39 oil (See Figure 2-20)

MANUAL ADDENDUM

Date: November 1, 1954

Reference: To be inserted in Part VIII, Section I, after Page 1-1.

Subject: Lubrication General

Purpose: Changes and additions in lubrication.

Information:

Part VIII - Flexowriter - Justowriter Service Manual

Section I - Lubrication General

The following is the up to date list of lubricants now being used on all Flexowriters and Justowriters:

CC Lubricant Number	General Description	Approved Source	Lubricants Name
1	A light oil which has good lubricating and rust preventative properties.	Shell Oil Co.	Shell Tellus Number 27
*2	For all porous metal bearings.	Socony Vacuum	Gargoyle DTE-797
4	A light grease containing lethium. Used on light mechanisms, where speed is a factor and loads are relatively low.	Lubrication, Ins.	Lubgrease L-2
**5	A light oil selected for specific application and should be used only for the application now specified.	Shell Oil Co.	SAE 20W
6	A grease of light consistency which contains oxidation resistant additives and provides good lubrication without excessive channeling.	Shell Oil Co.	Retinax "T"

(see next page)

CC Lubricant Number	General Description	Approved Source	Lubricants Name
***7	A powdered graphite used wherever a dry lubrication is desirable.	Bel-Ray Co.	Molylube 16
*CC2	The former lubricant Esso WS1170 is being discontinued immediately. Branches and Agencies are requested to order the new CC No. 2 immediately.		
**CC5	This oil is specifically assigned for use on the drive chain only.		
***CC7	This lubricant is used for the keylever interlocks only. The interlocks should NOT be lubricated with any other type of lubricant.		

Friden — *Customer Service Engineering*

#5

MANUAL ADDENDUM

Date: March 28, 1955

Reference: To be inserted in Part VIII, Section 1, after Page 1-1.

Subject: Lubrication General

Purpose: Change in lubrication - CC No. 4 and CC No. 6

Information:

Part VIII - Flexowriter - Justowriter Service Manual

Section 1 - Lubrication General

All lubrication points throughout Part VIII showing CC No. 4 are now being lubricated with CC No. 6.

Tests on CC No. 4 and CC No. 6 lubricants indicated both to have the same lubricating qualities. Therefore, to eliminate the use of two similar type lubricants, CC No. 4 was discontinued.

Friden — Customer Service Engineering

#18

MANUAL ADDENDUM

Date: November 18, 1958

Reference: To be inserted in Part VIII, Section 1, after Page 1-1.

Subject: Lubrication General

Purpose: New Lubricant

Information:

Part VIII - Flexowriter - Justowriter Service Manual

Section 1 - Lubrication General

Lubricant Number	General Description	Lubricant Name
8	A light lubricant used on light mechanisms and gears	Molylube Alloy SM Oil #0

WRITING MACHINE

The writing machine lubrication information contained in this section includes the Final Assembly, Carriage and Rails and Power Frame.

Final Assembly — The lubrication points for the final assembly are shown on figures 2-1 through 2-4.

C. C. lubricant number 4 should be used on all gear teeth, spring ends, main spring drum shaft, forged ends of all links and link pivots.

C. C. lubricant number 2 should be used on all porous metal bearings.

C. C. lubricant number 1 should be used on all pivots, bearings or moving parts not otherwise shown in figures 2-1 through 2-4.

Carriage and Rails — The lubrication points for the carriage and rails are shown on figures 2-5 through 2-12.

C. C. lubricant number 4 (unless specially noted) should be used on the operating surfaces of the escapement wheels and dogs, escapement racks and gears, all escapement wheel bearings, all forged link ends, index pawl carrier, tape hook spring, escapement trip slide, lost motion links, back space pawl and gear, latching points and all spring ends.

Note: On points where it indicates to use both C. C. No. 1 and C. C. No. 4, Lubricate first with C. C. No. 1 and then with C. C. No. 4.

C. C. lubricant number 1 should be used on all other moving parts, pivots or bearings not otherwise specified.

Power Frame — The lubrication points for the power frame are shown on figures 2-13 through 2-20.

C. C. lubricant number 4 should be used on all forged ends of all links, all spring ends, ribbon lift bar operating surface, keylever forks and keylever bearing support fulcrum.

C. C. lubricant number 1 should be used on the segment and type bars, combs, pivots, bearings and moving parts not otherwise shown.

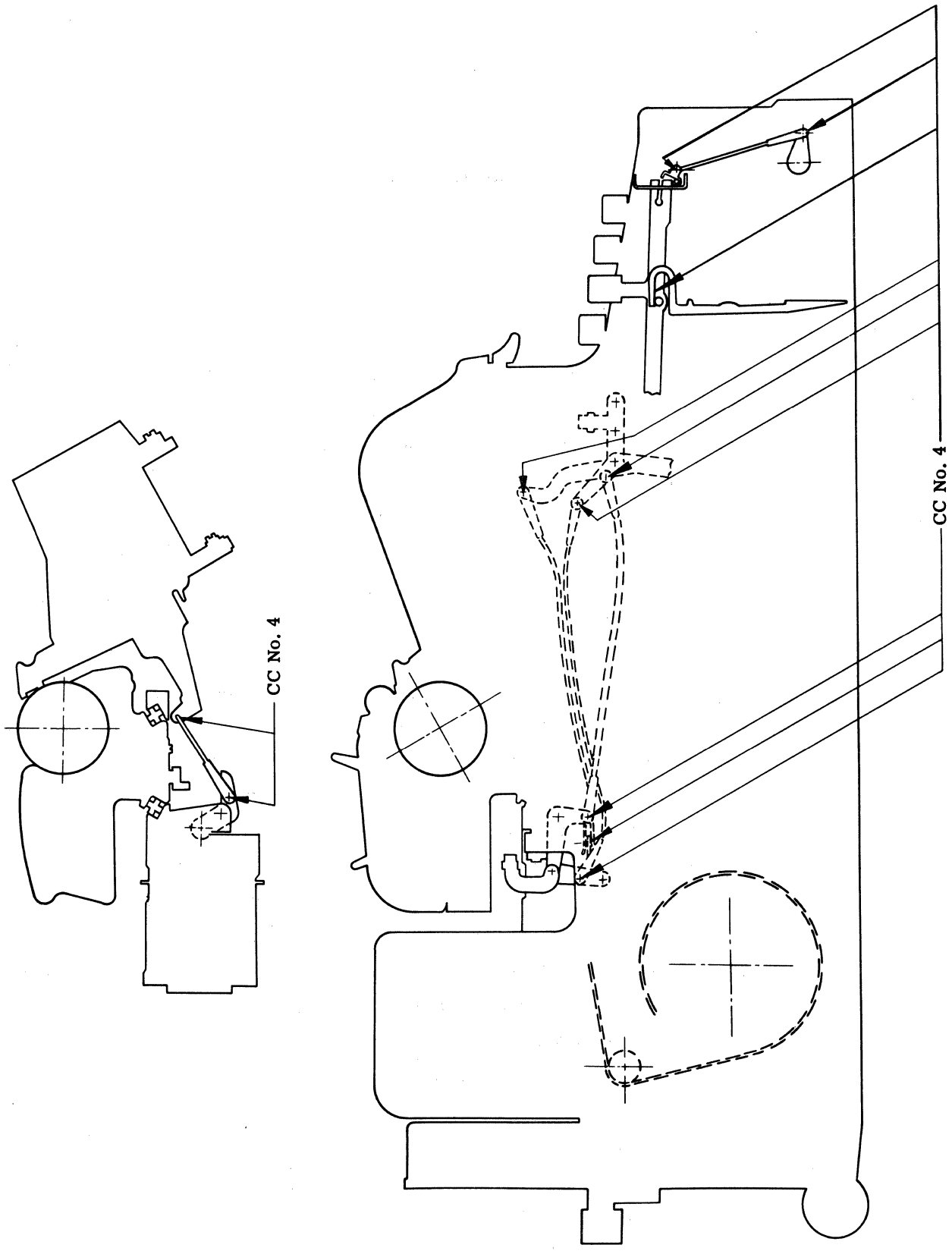

Figure 2-1 Final Assembly (Left side)

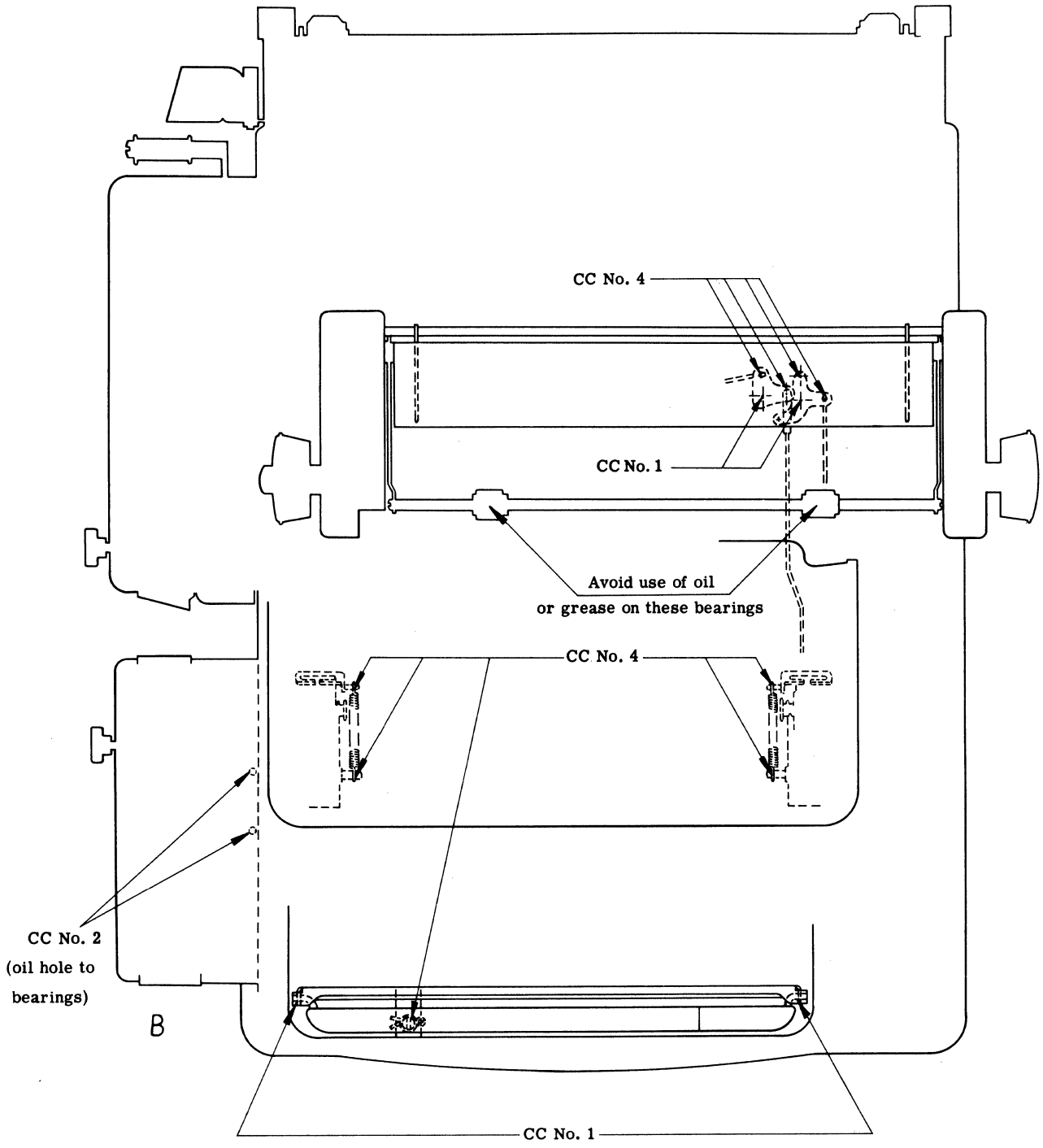

Figure 2-2 Final Assembly (Top)

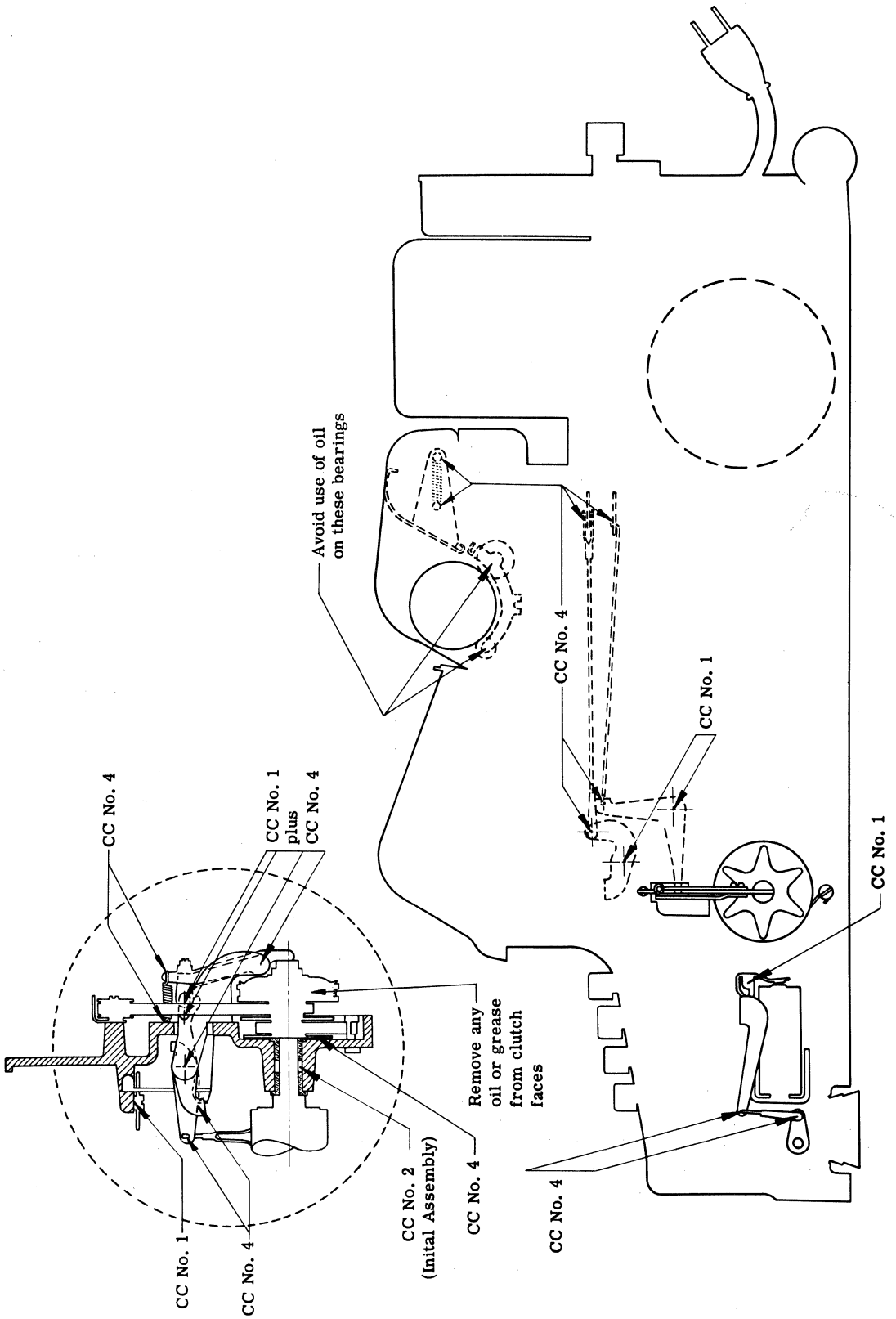

Figure 2-3 Final Assembly (Right Side)

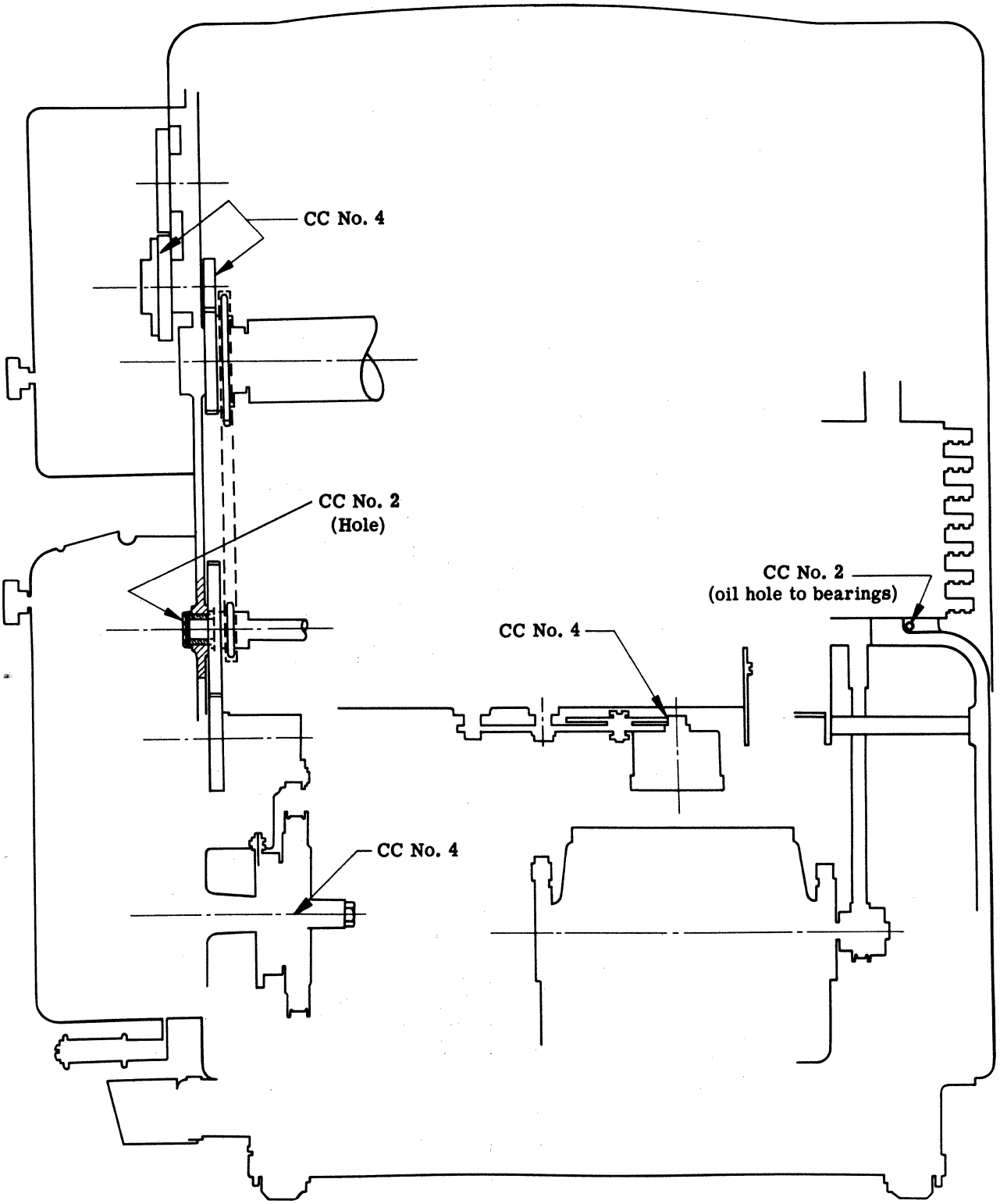

Figure 2-4 Final Assembly (Bottom)

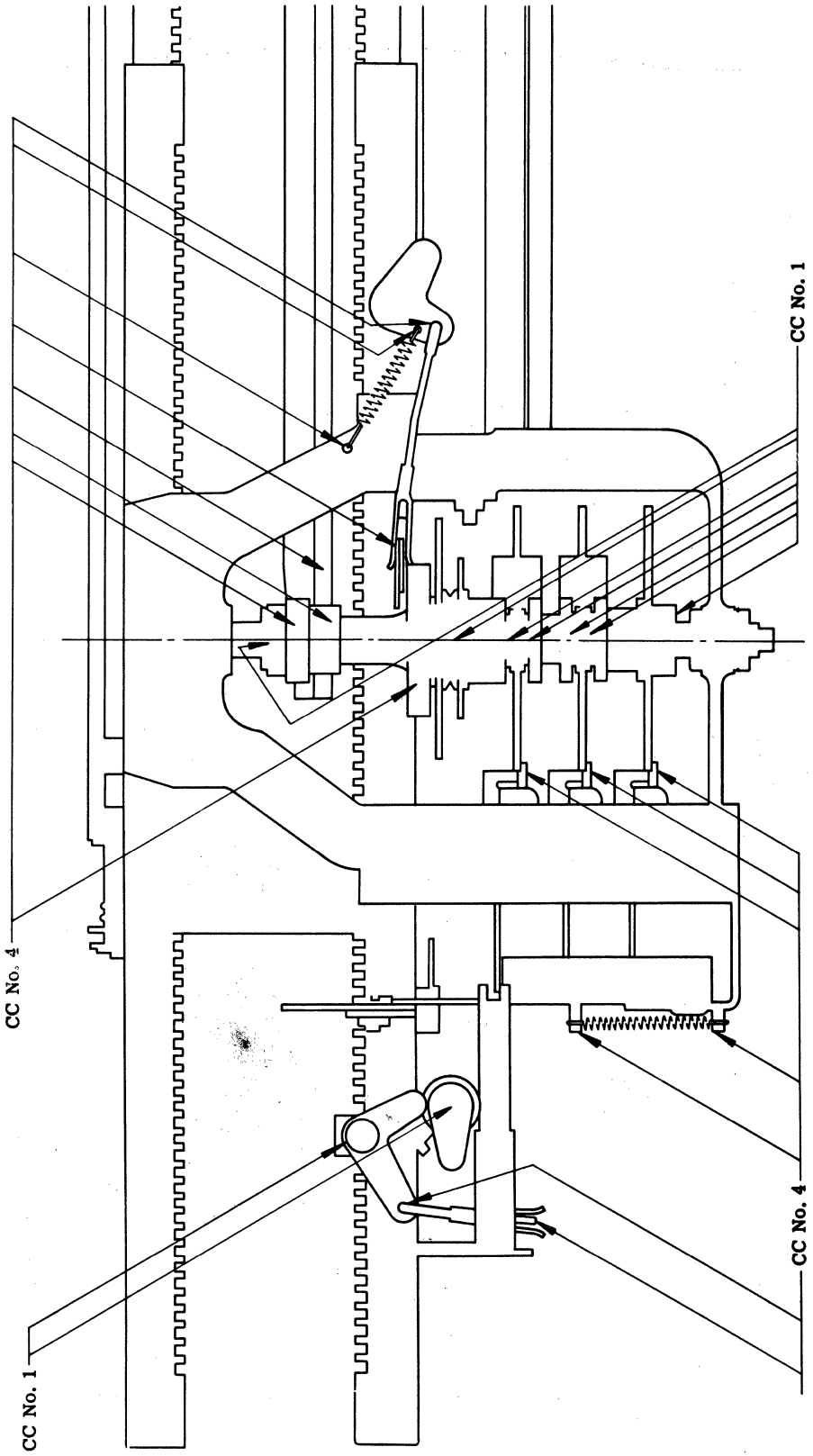

Figure 2-5 Carriage & Rails--Escapement

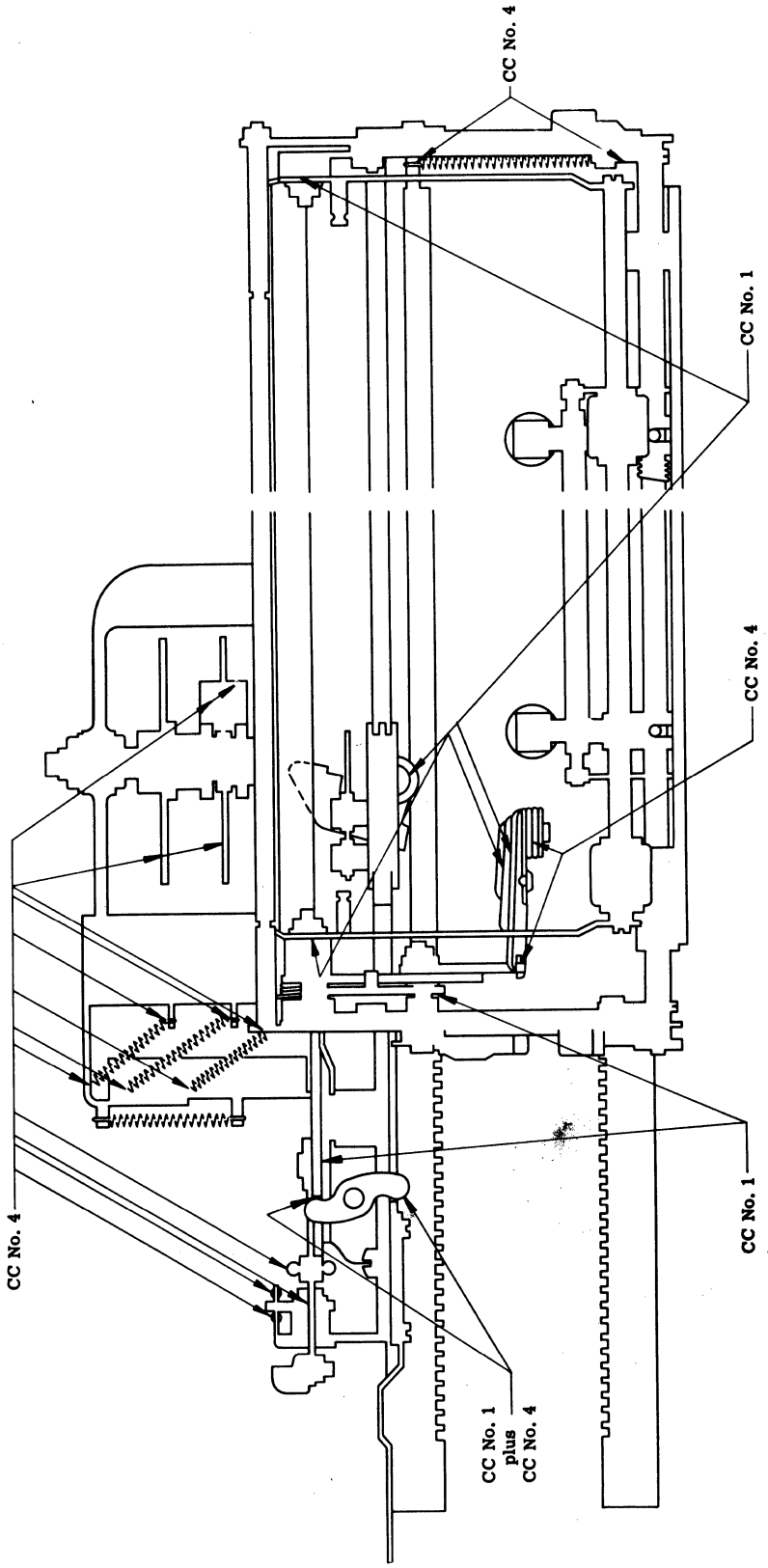

Figure 2-6 Carriage & Rails (Top)

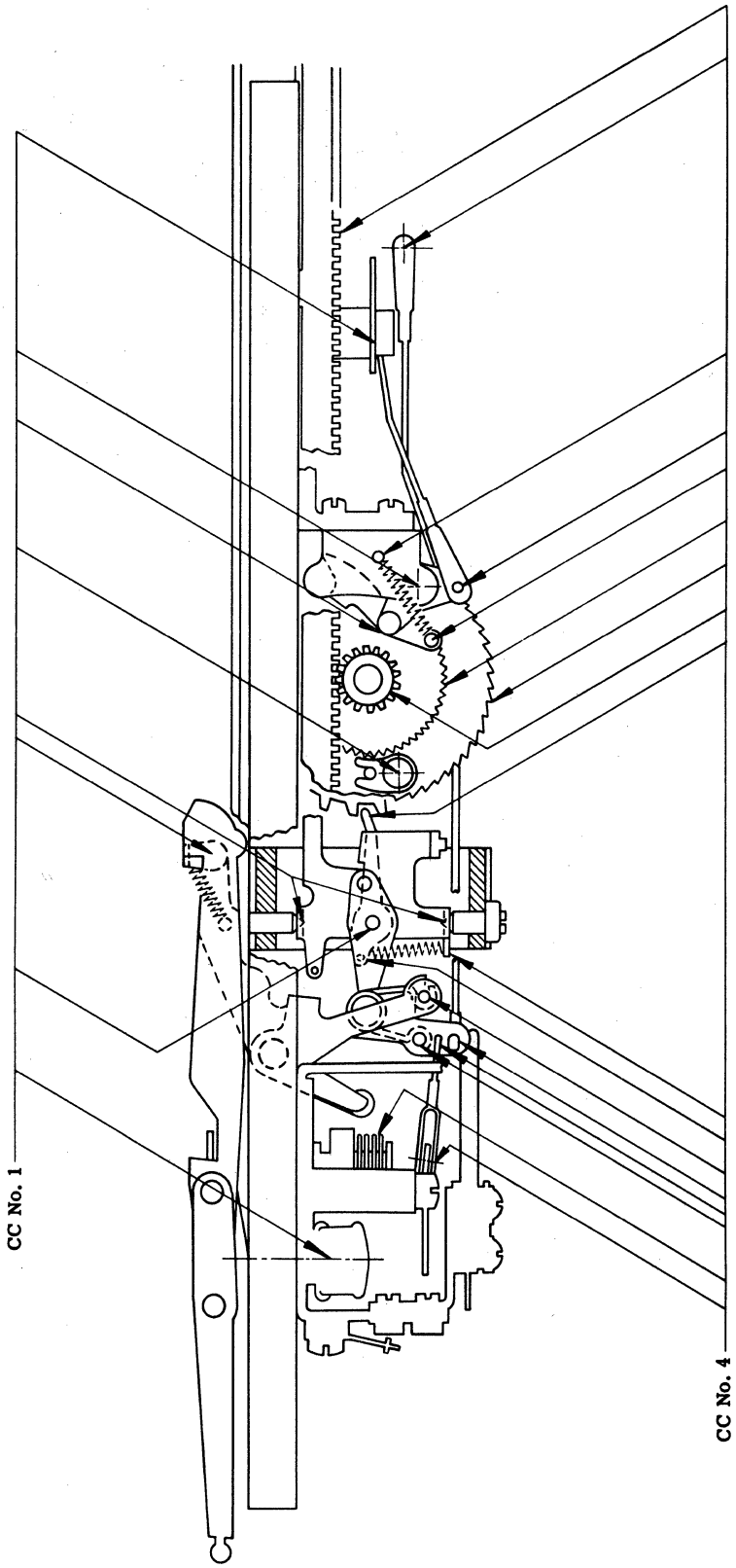

Figure 2-7 Rear Rail Assembly

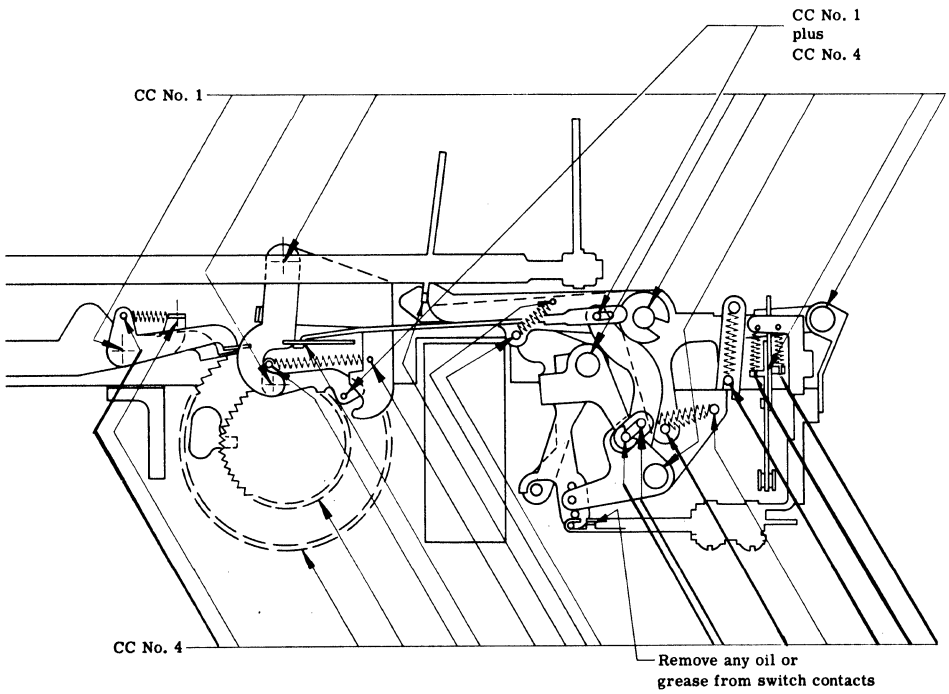

Figure 2-8 Carriage & Rails (Rear-Right)

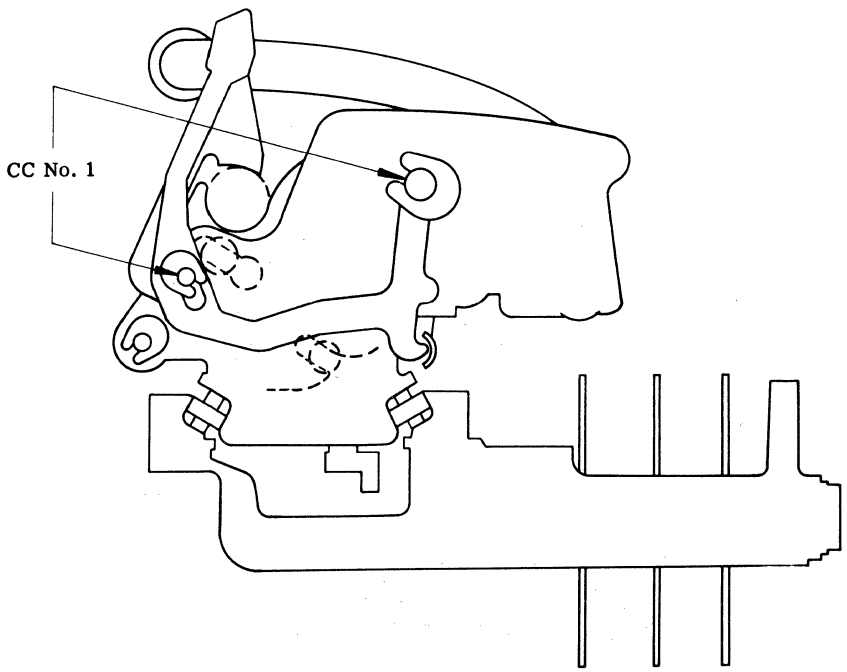

Figure 2-9 Carriage & Rails (Right Side)

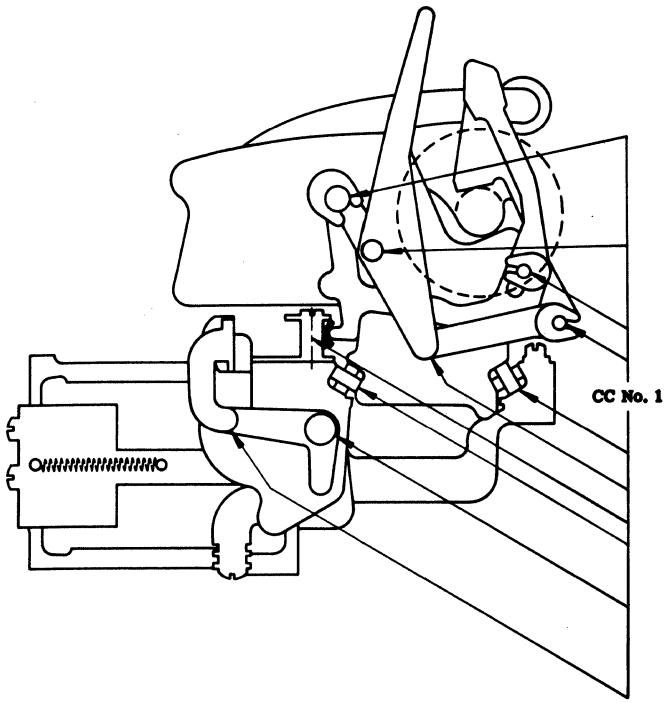

Figure 2-10 Carriage & Rails (Left Side)

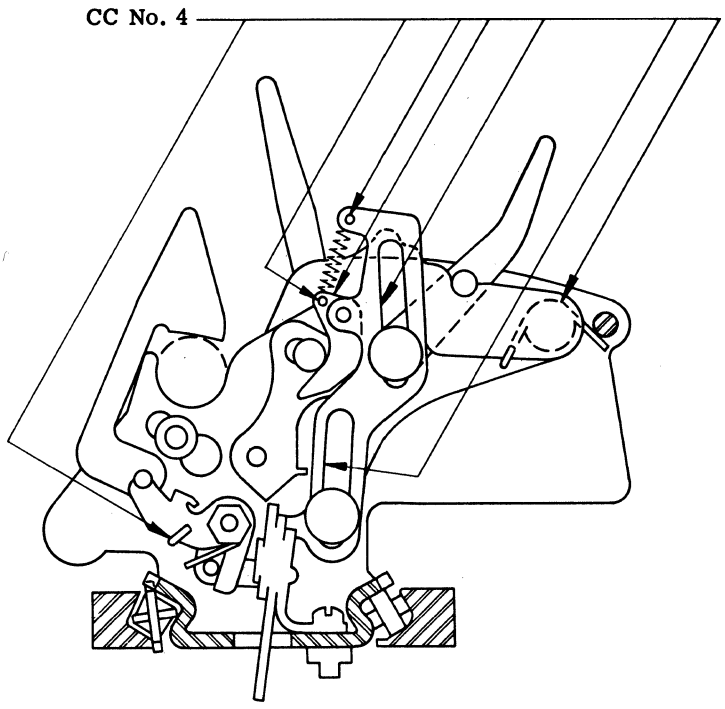

Figure 2-11 Carriage & Rails (L. H. Platen Yoke)

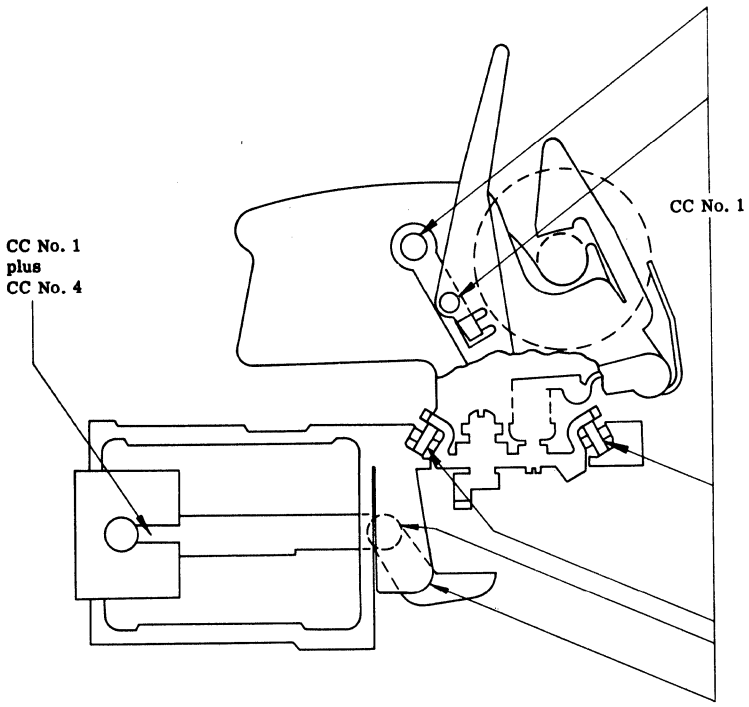

Figure 2-12 Carriage & Rails (Left Side)

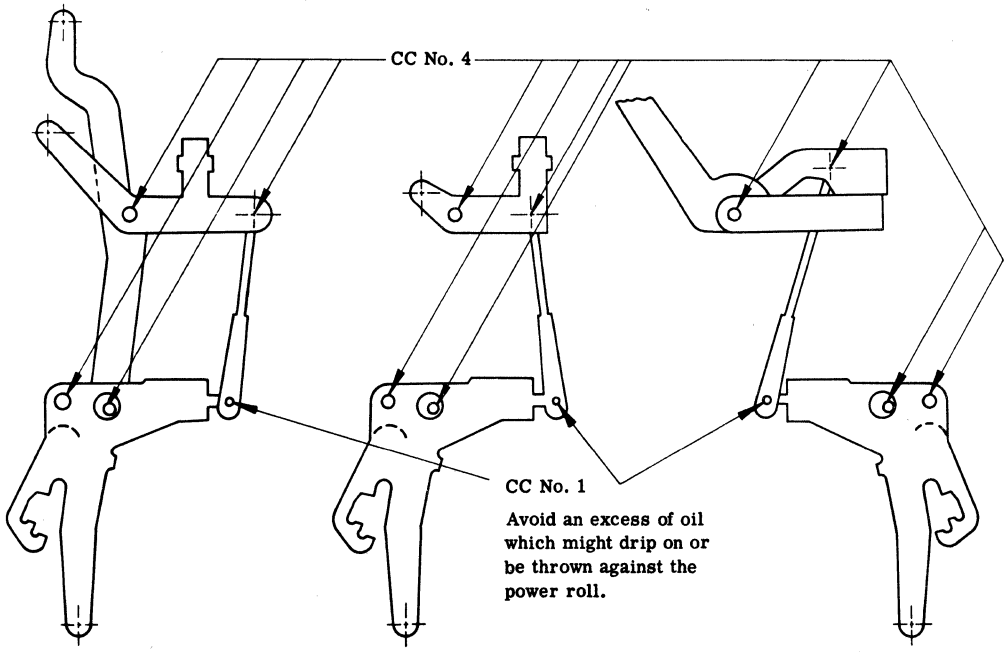

Figure 2-13 Cam & Linkage

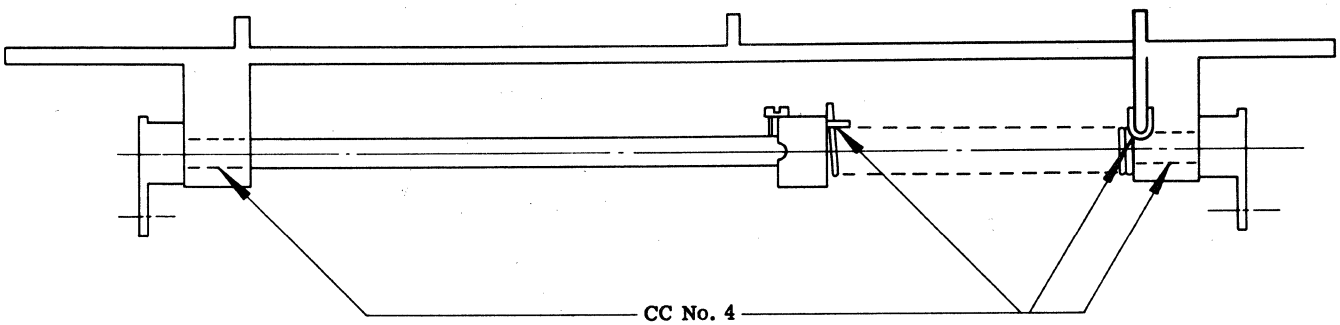

Figure 2-14 Shift Equalizing Shaft

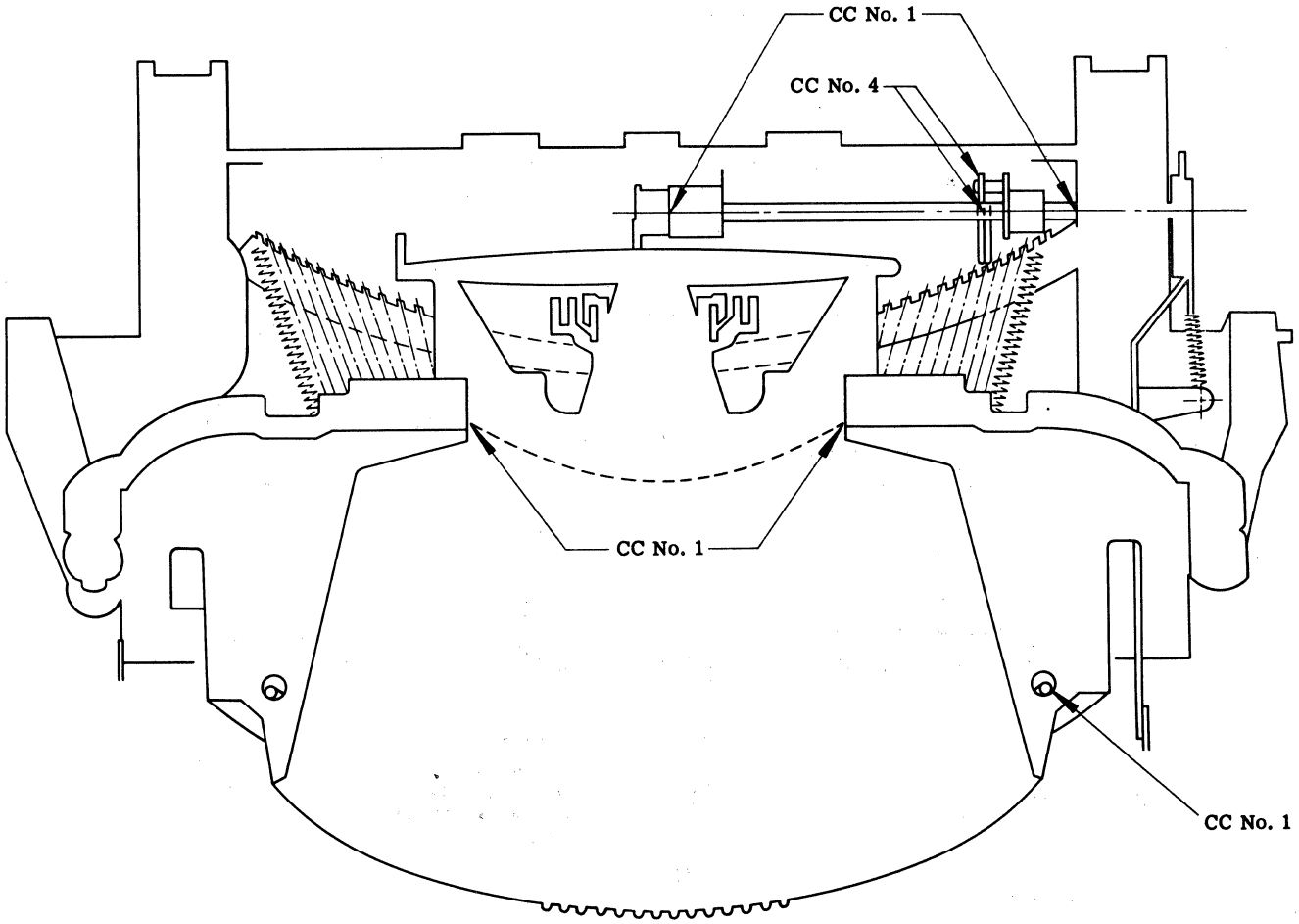

Figure 2-15 Power Frame (Top)

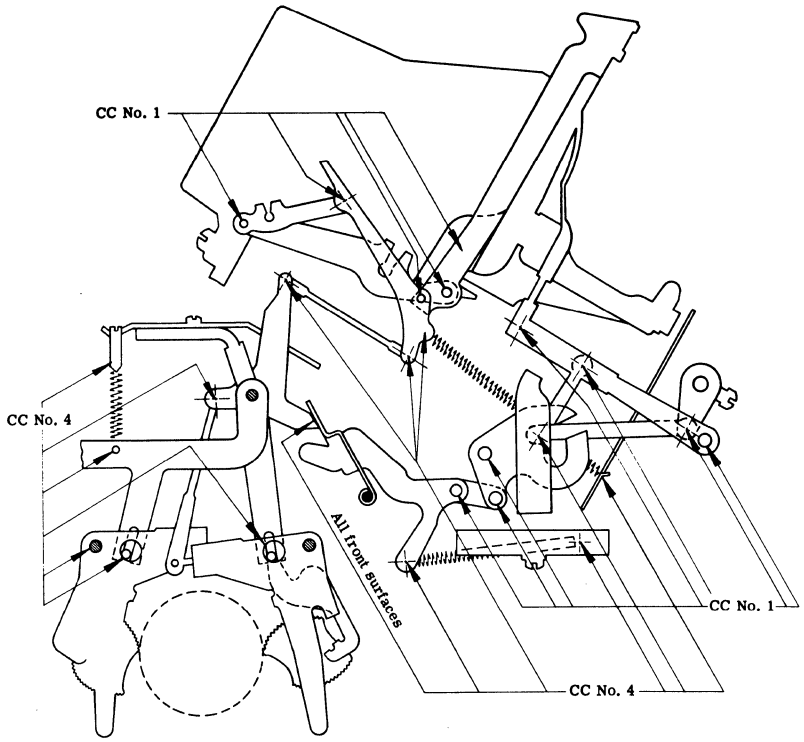

Figure 2-16 Power Frame (Cutaway-Right)

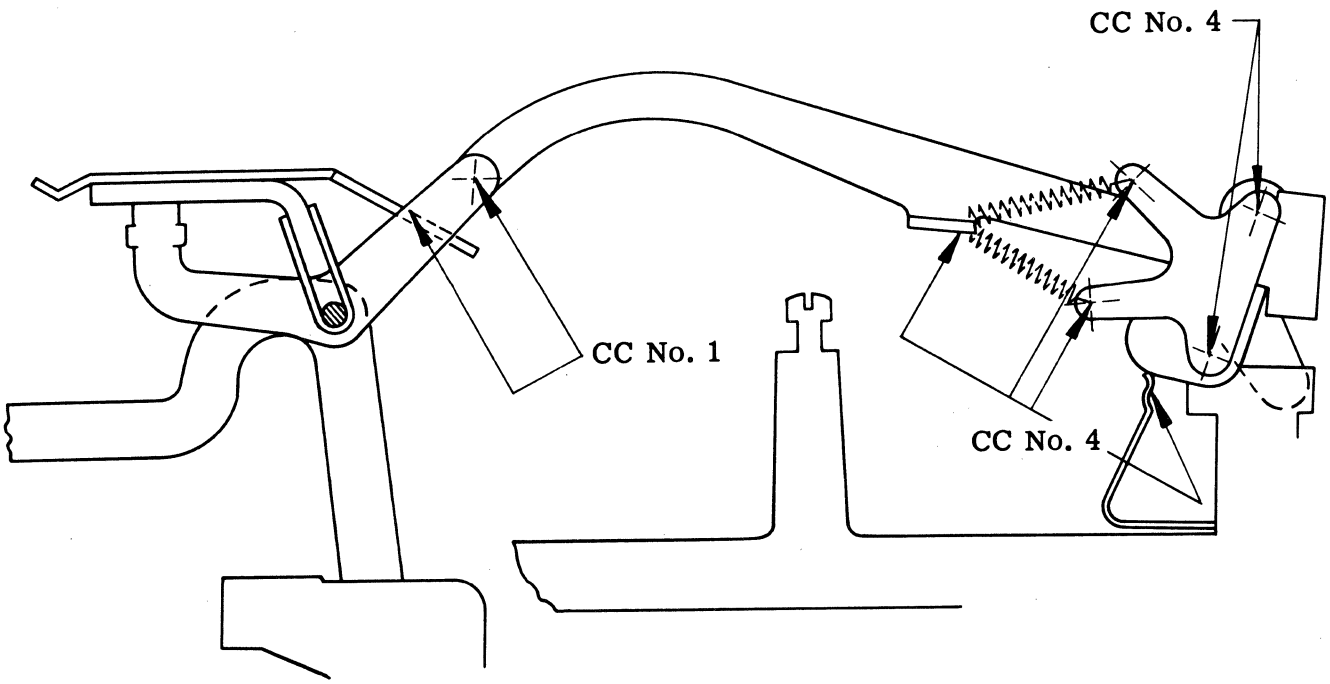

Figure 2-17 Color Control Linkage

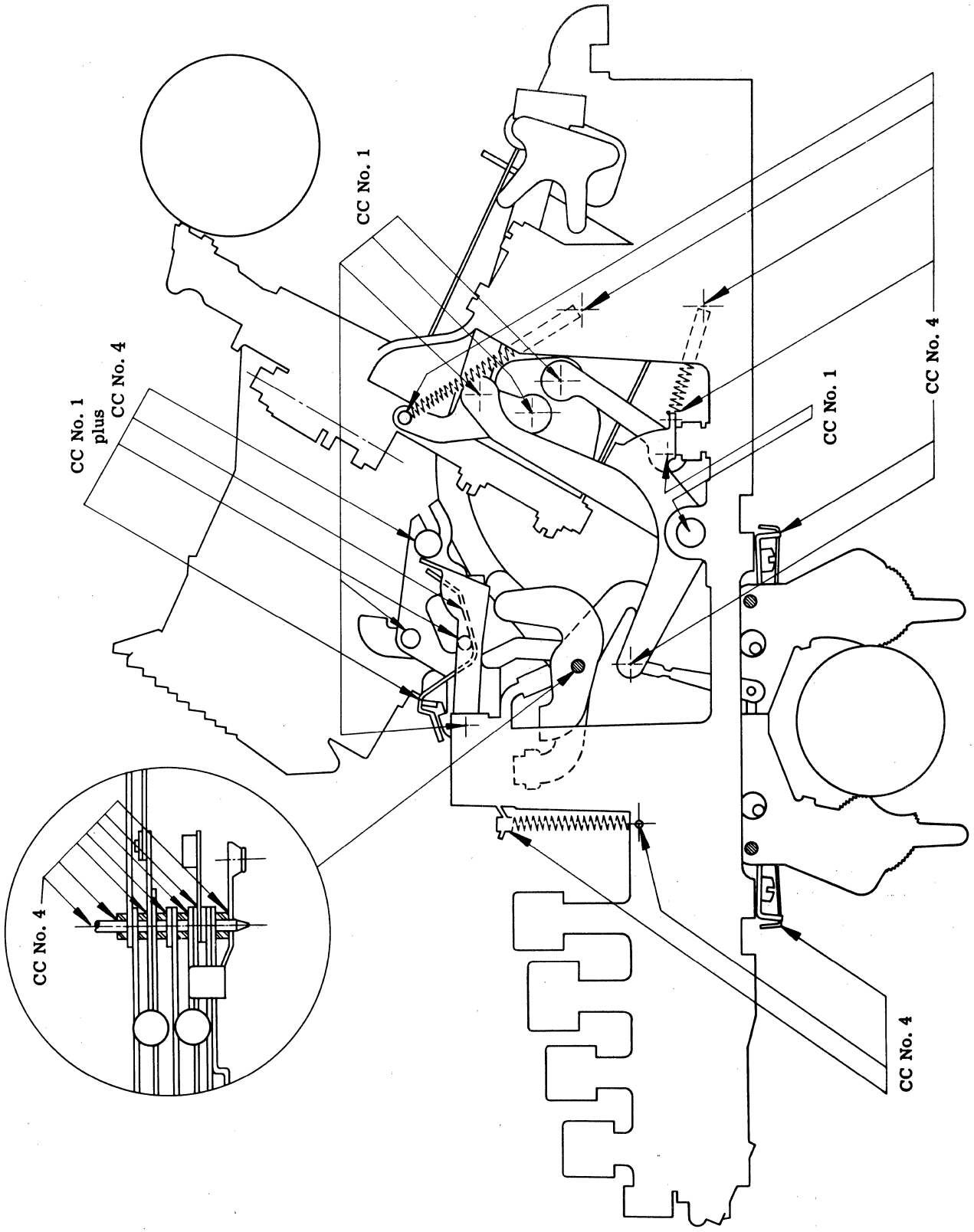

Figure 2-18 Power Frame (Right Side)

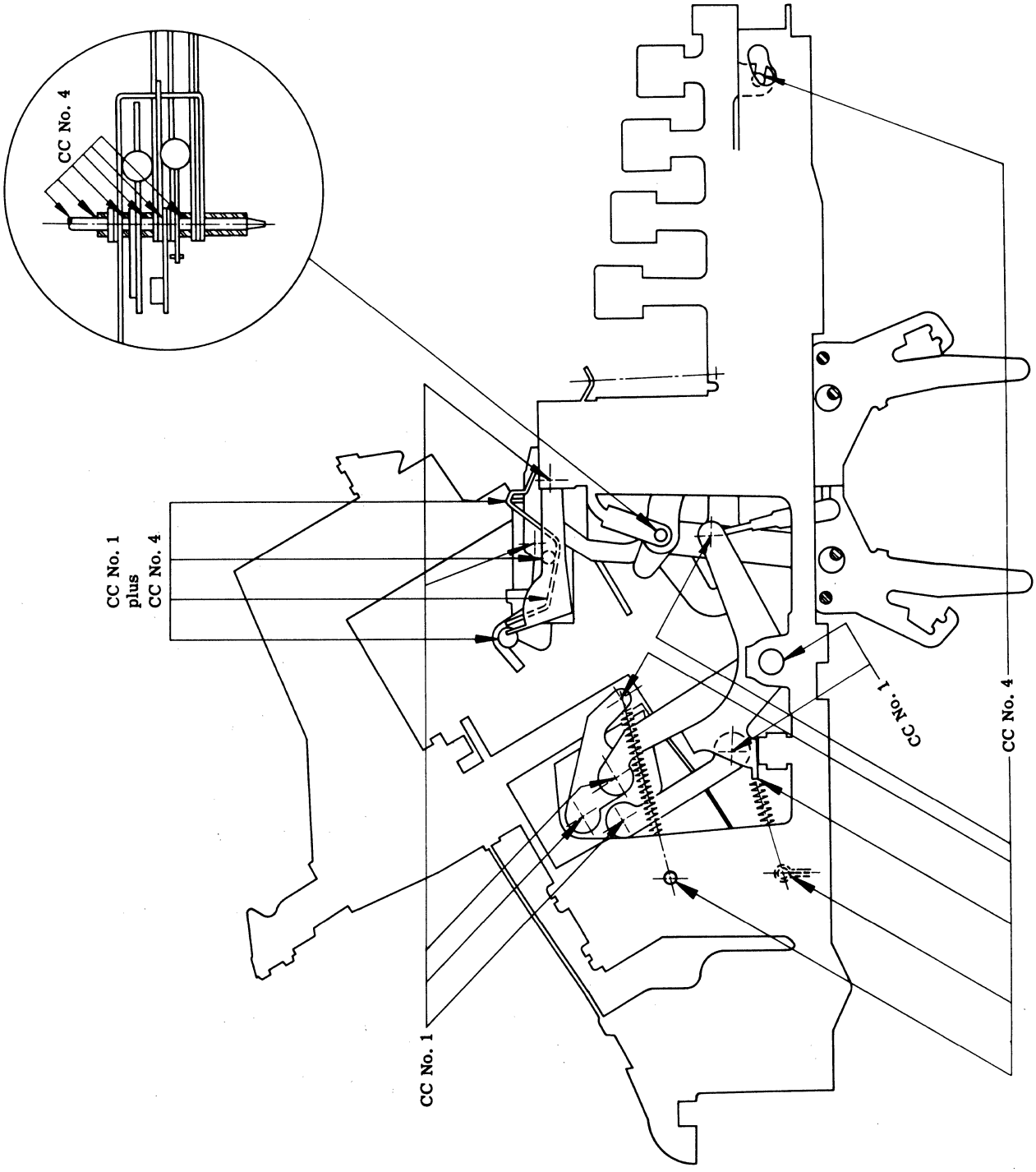

Figure 2-19 Power Frame (Left Side)

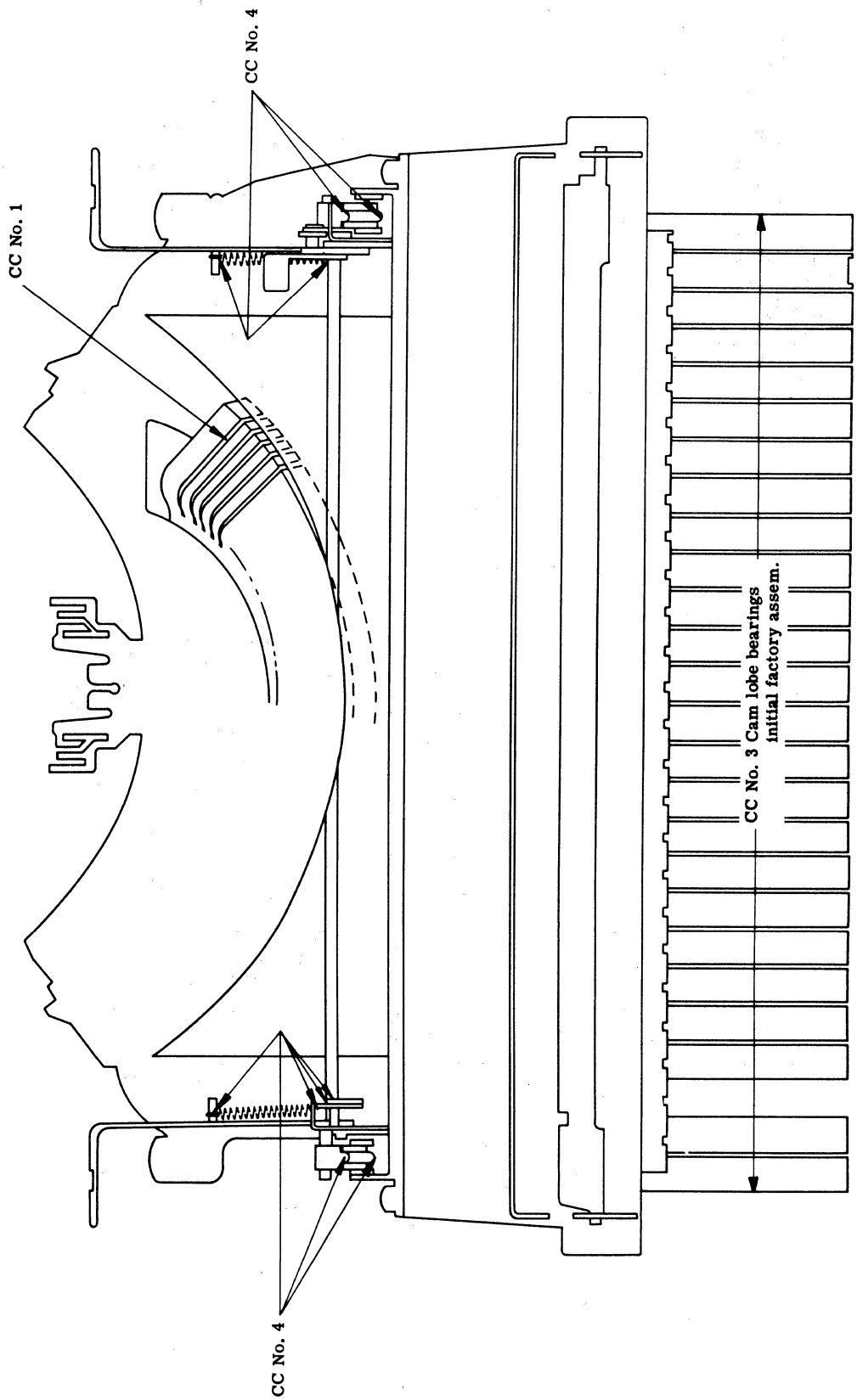

Figure 2-20 Power Frame (Front)

CODE SELECTOR

The two figures (Figures 3-1 and 3-2) in this section show the various points of lubrication necessary to maintain good operating condition of the code selector.

All slide cam surfaces and all spring ends should be lubricated with C. C. lubricant number 4.

All slides, where they ride in the combs all rollers, bearings and pivots should be lubricated with C. C. lubricant number 1.

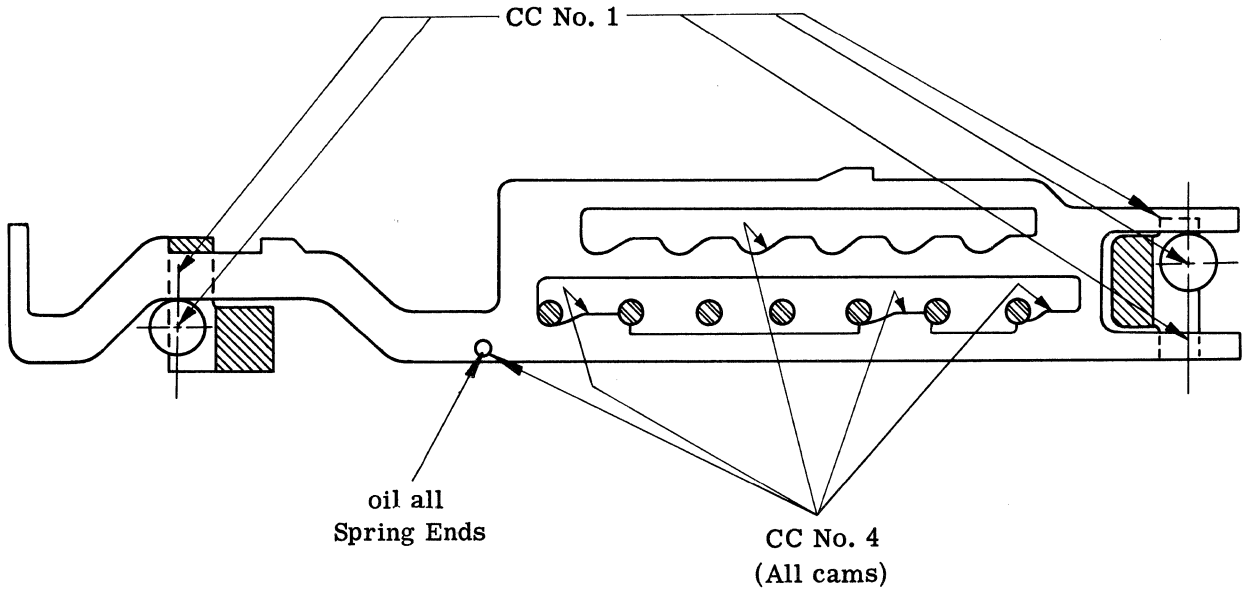

Figure 3-1 Selector Slide

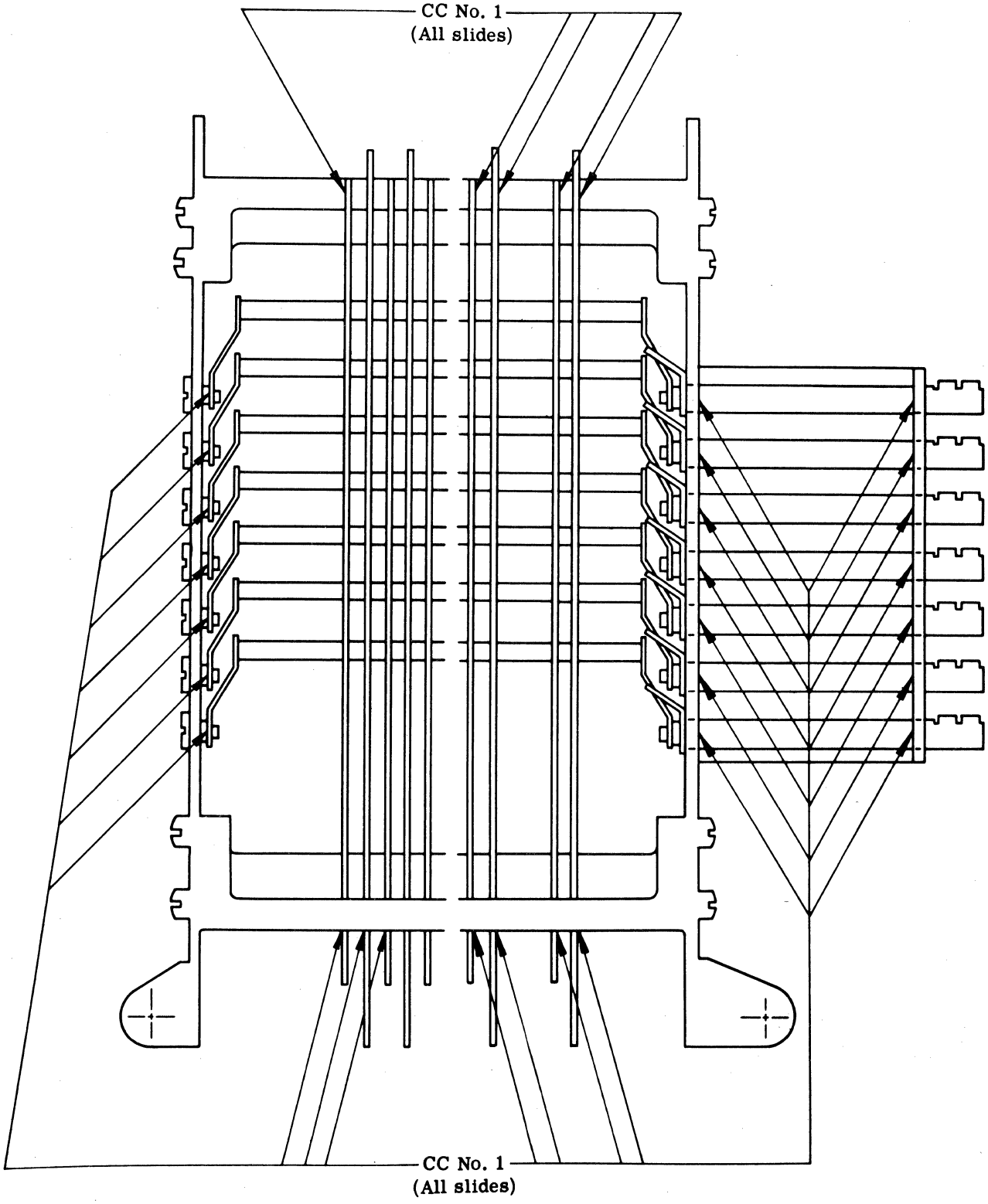

Figure 3-2 Code Selector

TAPE PUNCH

The lubrication points for the various components in the tape punch are shown on figures 4-1 through 4-7.

The following points should be lubricated with C. C. lubricant number 4: All latching surfaces, on armatures where knock-off bails contact, detent, cam surfaces, drive gear teeth, clutch sleeve and collar surfaces (where armatures contact), restoring bail and spring ends.

The cam roller bearings should be lubricated with C. C. lubricant number 1 and then followed by C. C. lubricant number 4.

All other moving parts, pivots or bearings not otherwise shown should be lubricated with C. C. lubricant number 1

Lubricate clutch spring with CC No. 6.

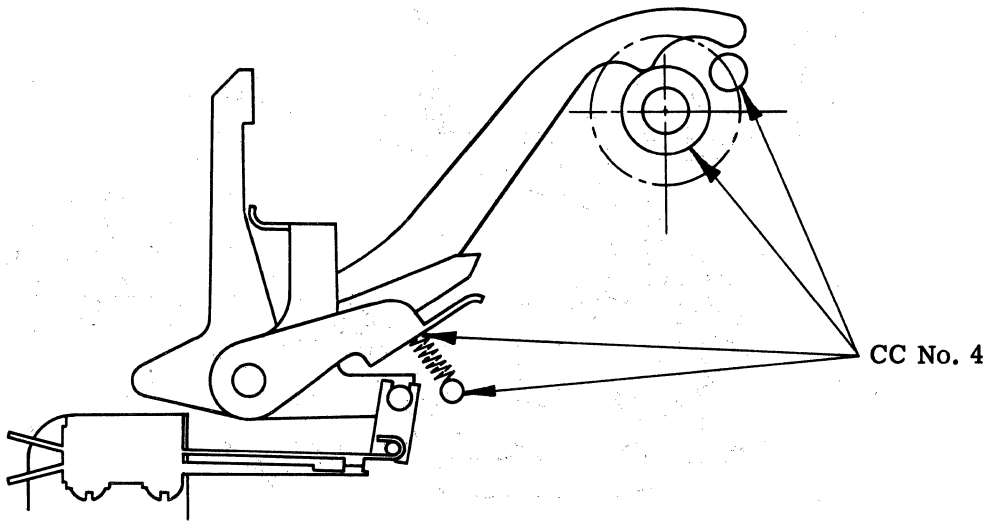

Figure 4-1 Latch Restoring Mechanism

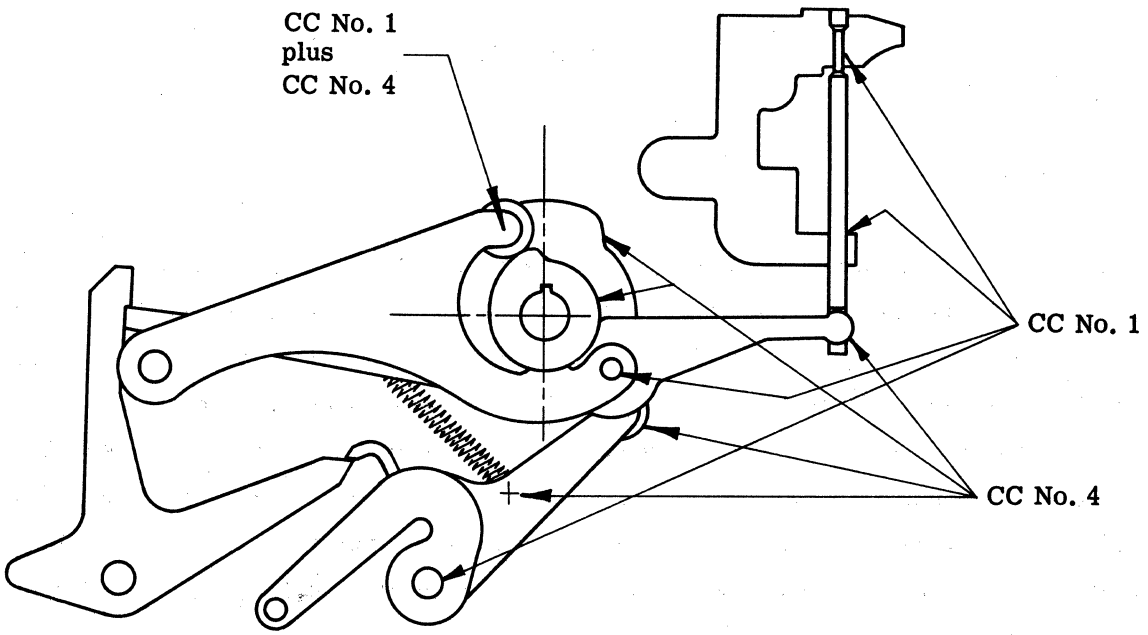

Figure 4-2 Latches, Operating Levers & Punch Pins

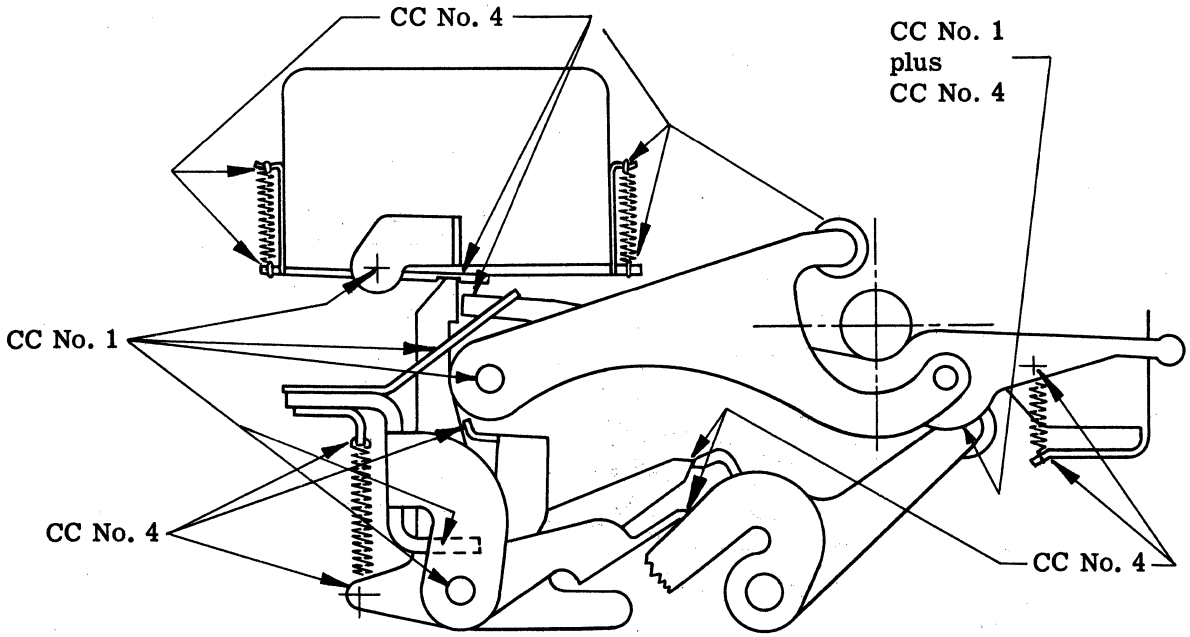

Figure 4-3 Armatures, Latches & Operating Levers

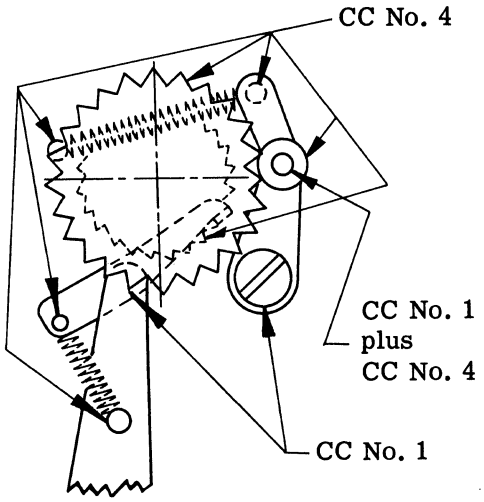

Figure 4-4 Feed Mechanism

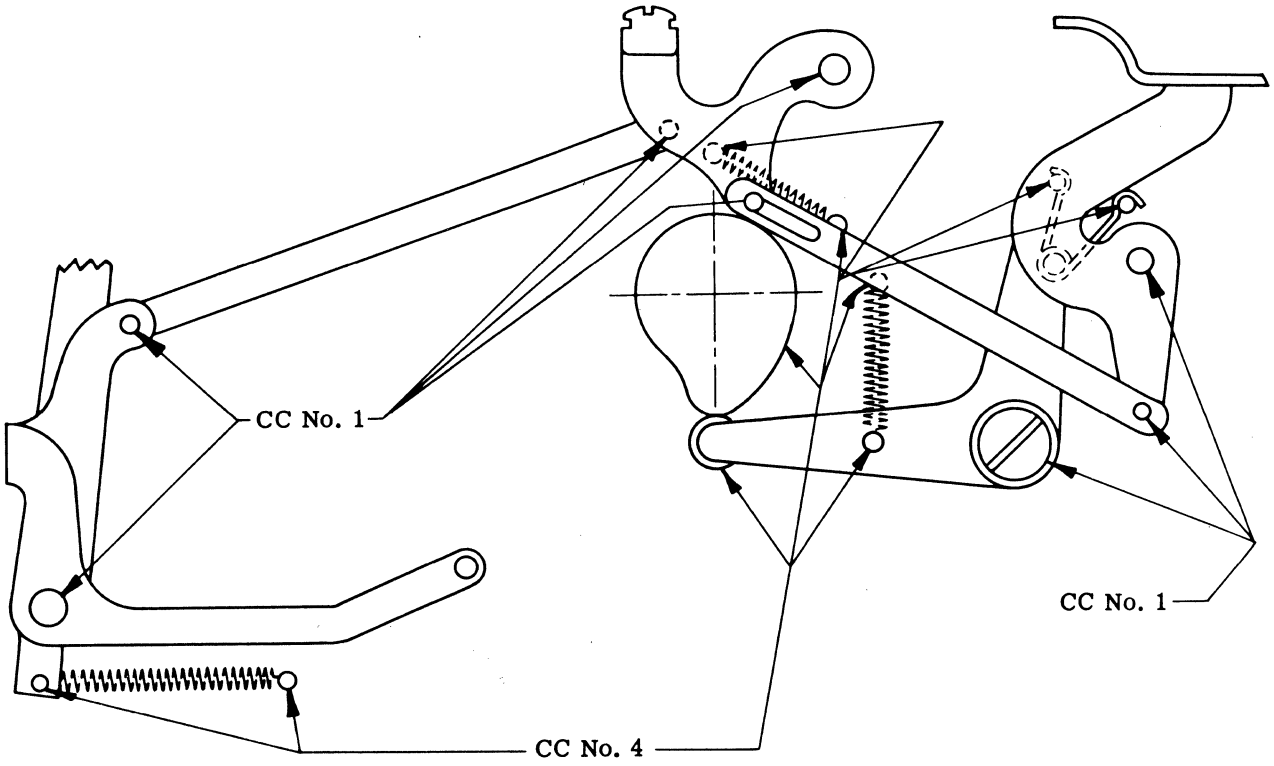

Figure 4-5 Tape Tension & Run-out Linkage

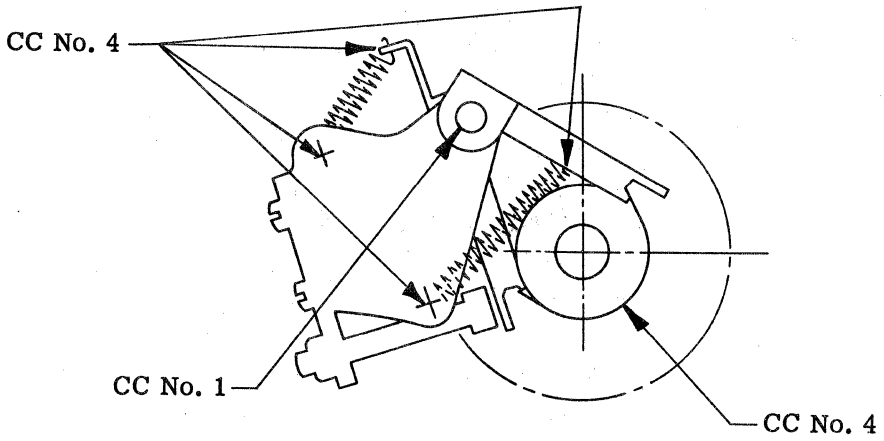

Figure 4-6 Clutch Mechanism

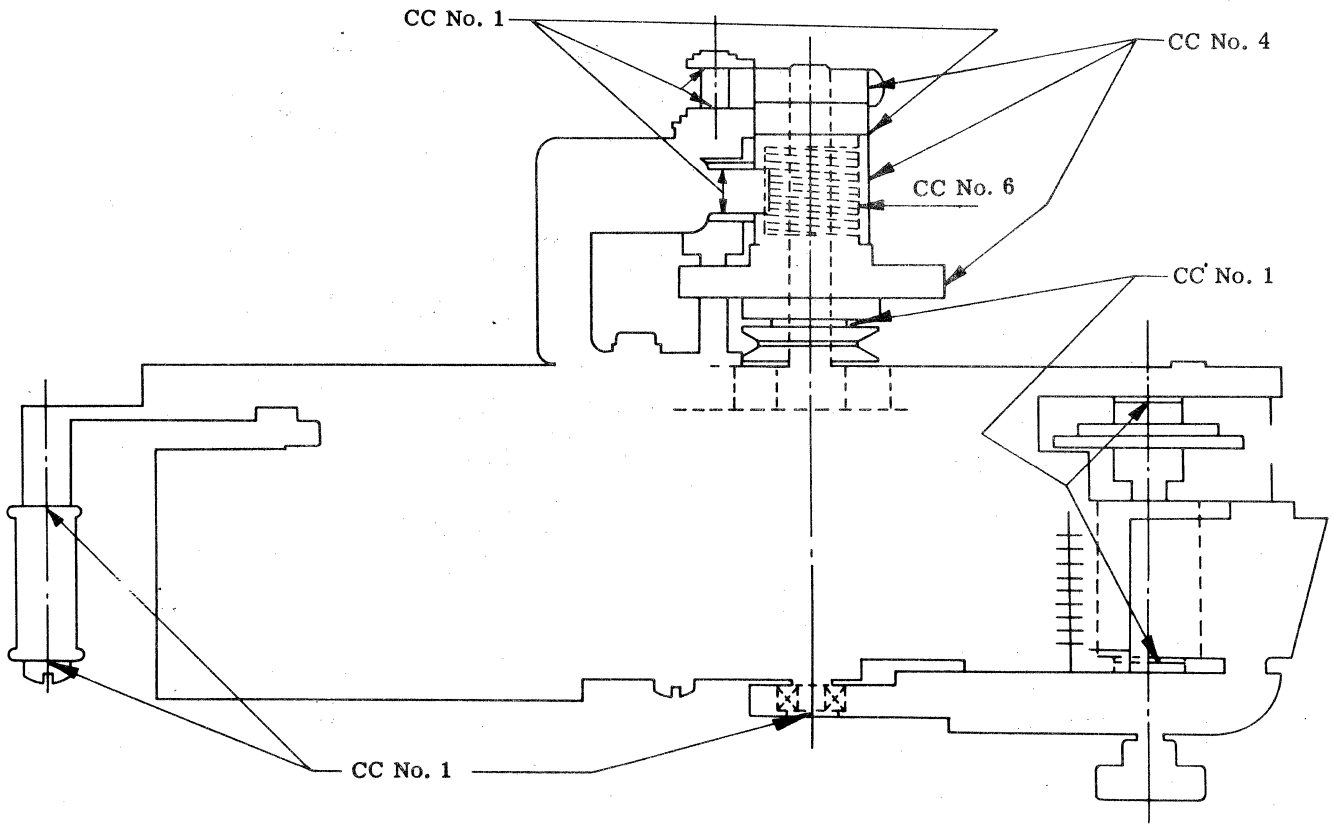

Figure 4-7 Tape Punch (Top)

SINGLE READER

The lubricating points for the various components of the tape reader are shown in figures 5-1 through 5-6

The following points should be lubricated with C. C. lubricant number 4: all cam surfaces, feed pawl, ratchet wheel, detent, surface of contact operating bails, spring ends and latching surfaces.

The cam roller bearings should be lubricated with C. C. lubricant number 1, then followed with C. C. lubricant number 4.

All other moving parts, pivots, bearings or combs not otherwise shown should be lubricated with C. C. lubricant number 1.

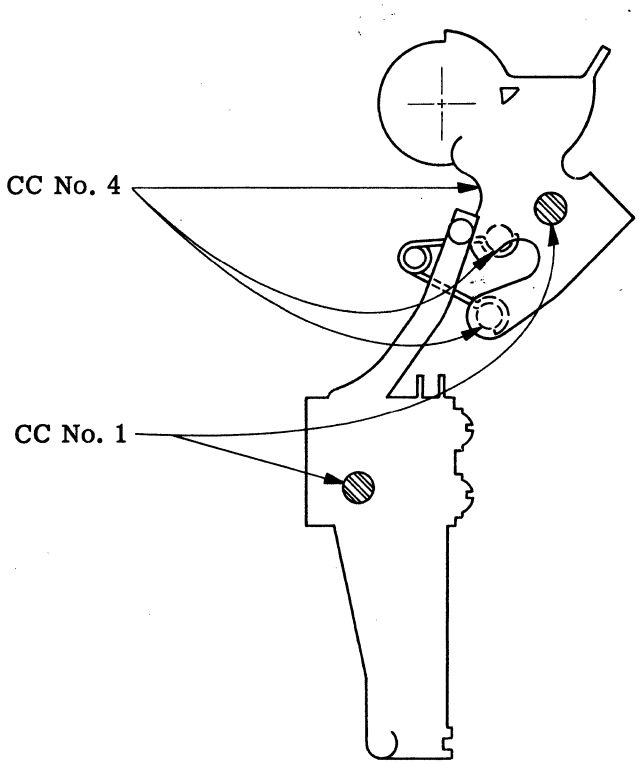

Figure 5-1 Tape Hold Down Linkage

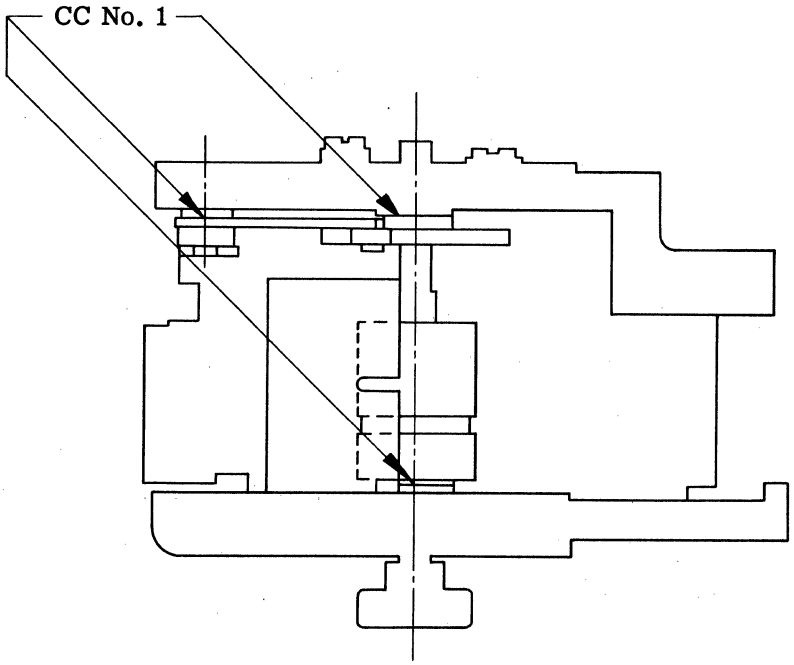

Figure 5-2 Tape Feed Shaft

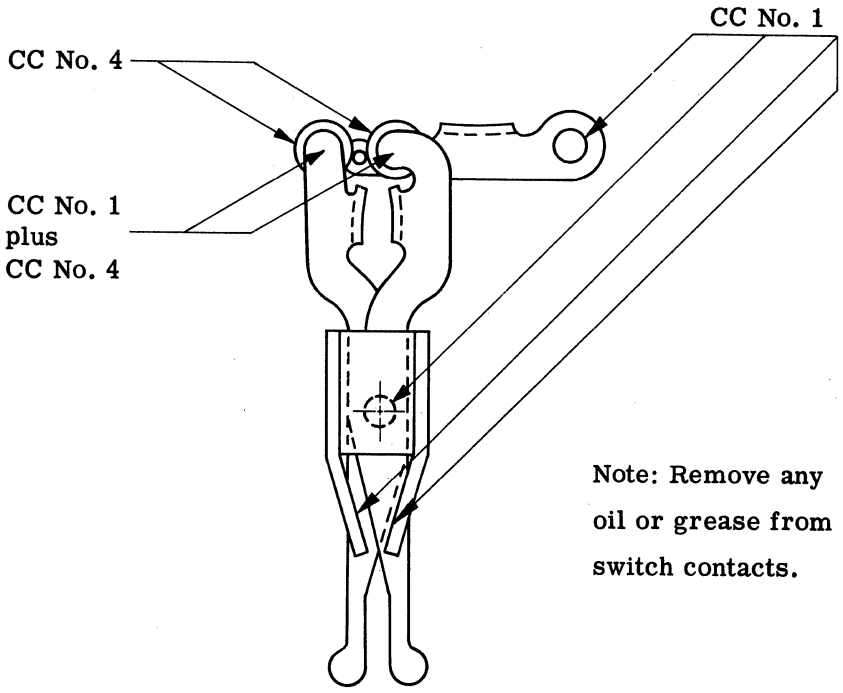

Figure 5-3 Contact Operating Bails

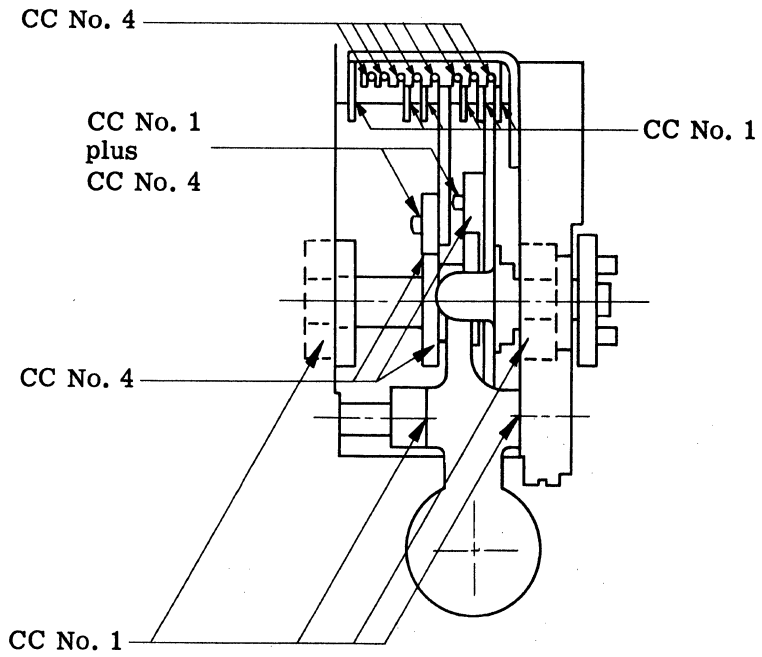

Figure 5-4 Armature, Cam Shaft & Springs

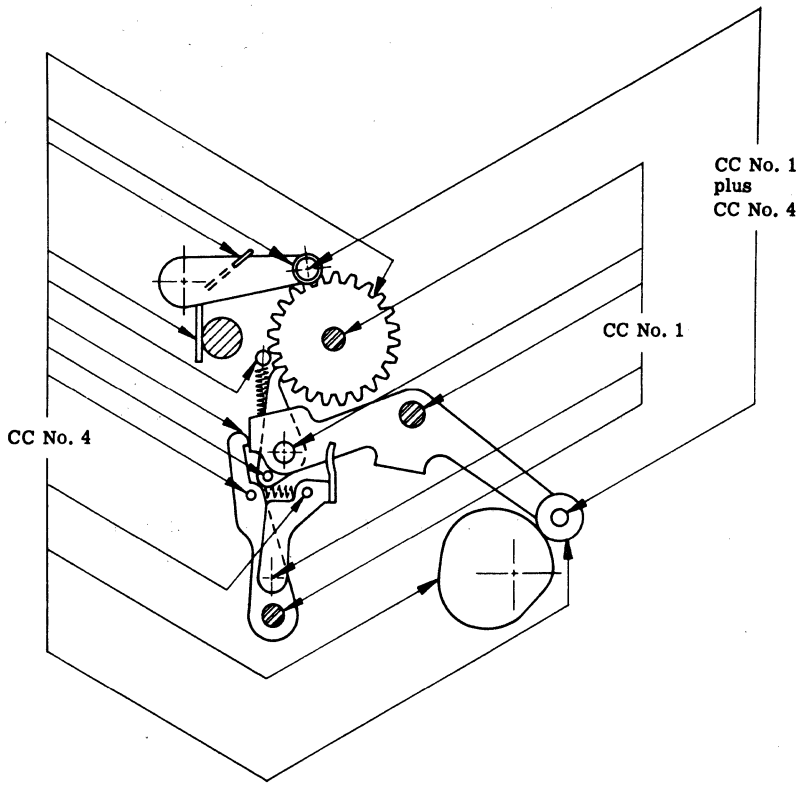

Figure 5-5 Tape Feed Mechanism

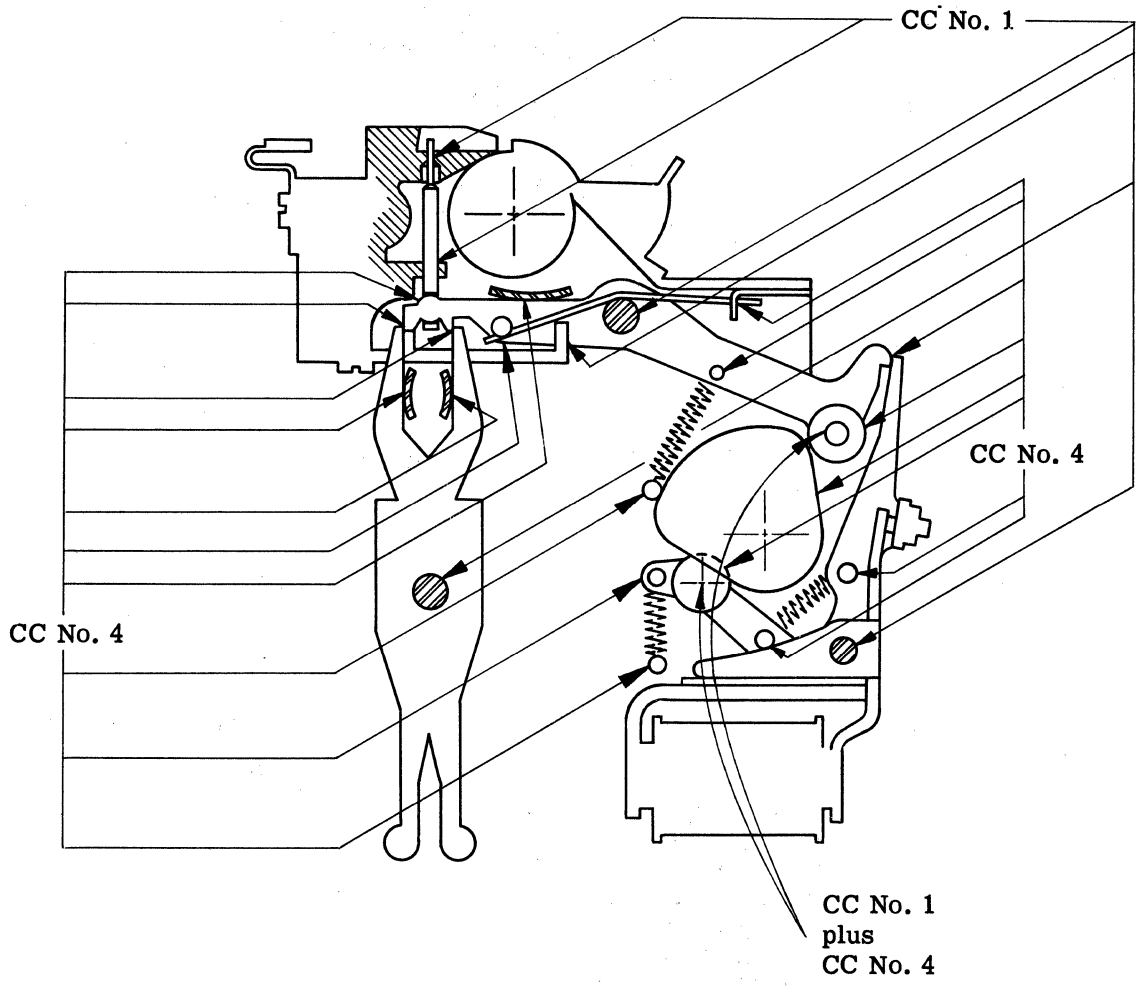

Figure 5-6 Pin & Contact Operating Mechanism

CODE TRANSLATOR

The lubricating points for the various components of the code translator are shown in figures 6-1 through 6-5.

The following points should be lubricated with C. C. lubricant number 4: latching points of permutation slides, surface of restoring bail, surface of cams, seeker ends (where they contact keylever pins), clutch sleeve and collar surfaces (where armatures contact), drive gear teeth and restoring bail springs.

The cam roller bearings should be lubricated with C. C. lubricant number 1 then followed with C. C. lubricant number 4.

All other moving parts, pivots or bearings not otherwise shown should be lubricated with C. C. lubricant number 1.

Lubricate clutch spring with CC No. 6.

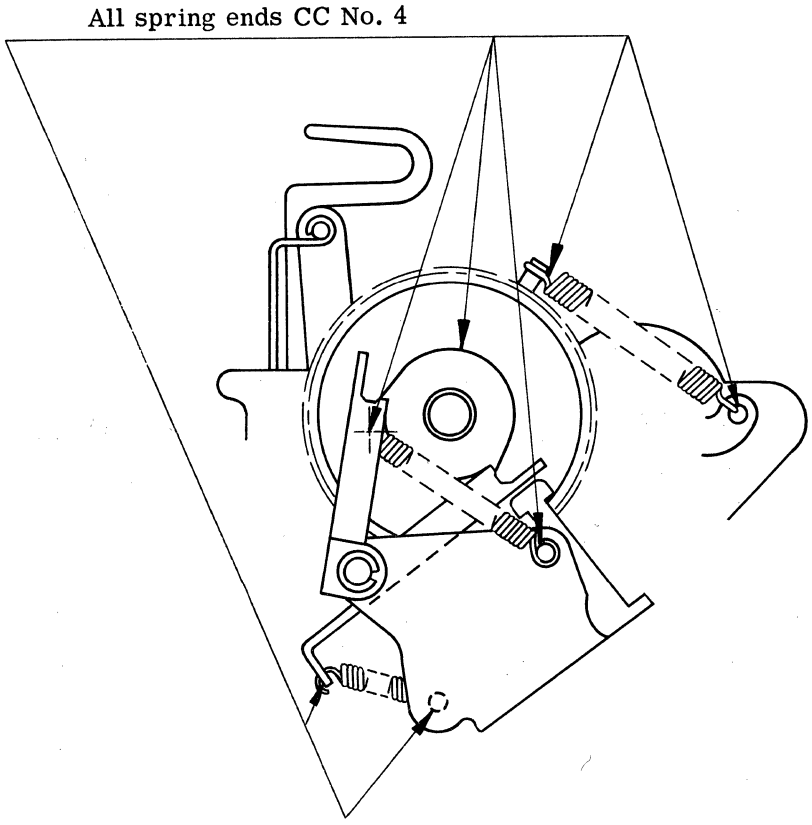

Figure 6-1 Code Translator (Left End)

Code Translator

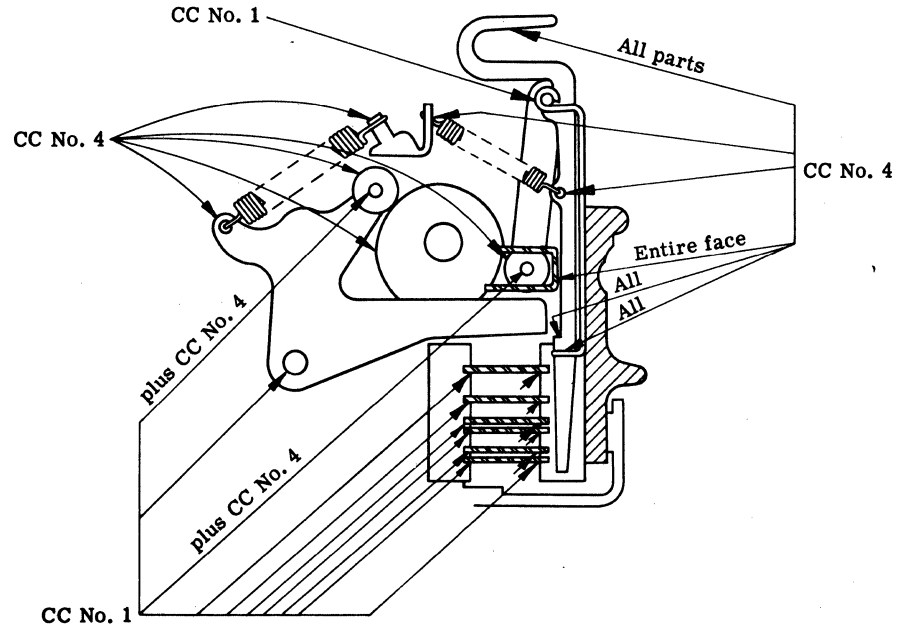

Figure 6-2 Code Translator (Cutaway—Right End)

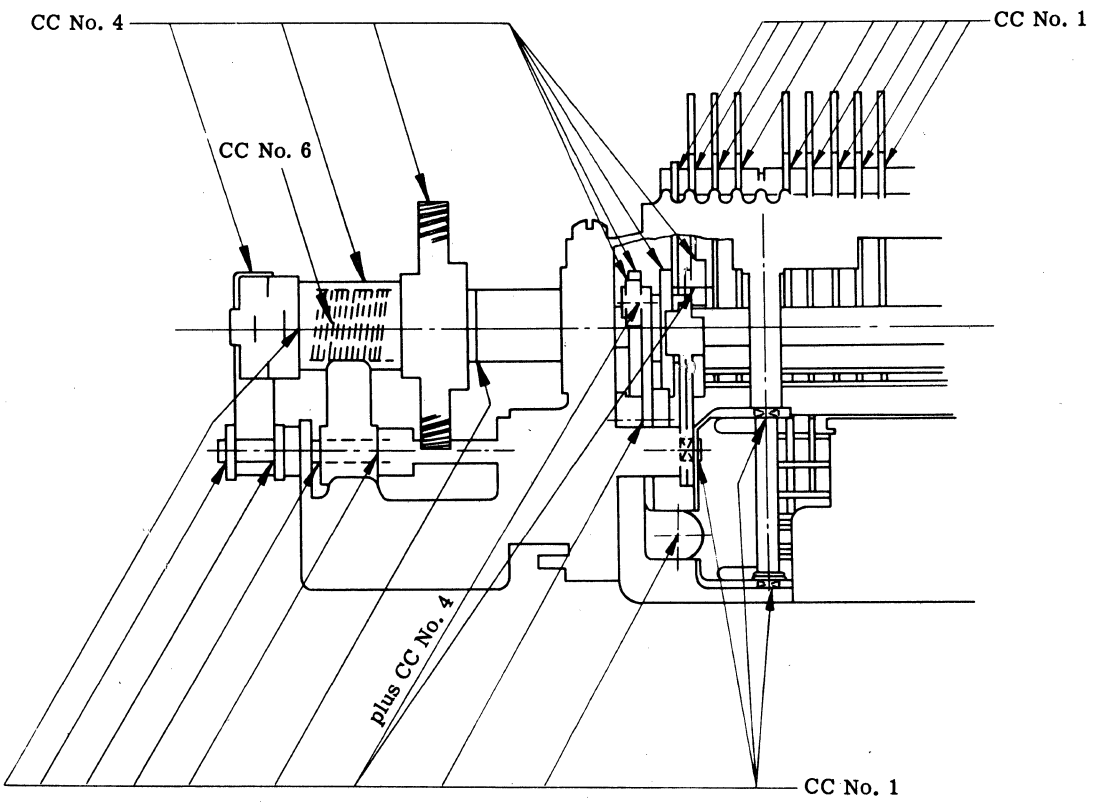

Figure 6-3 Clutch, Shaft, Cams & Seekers

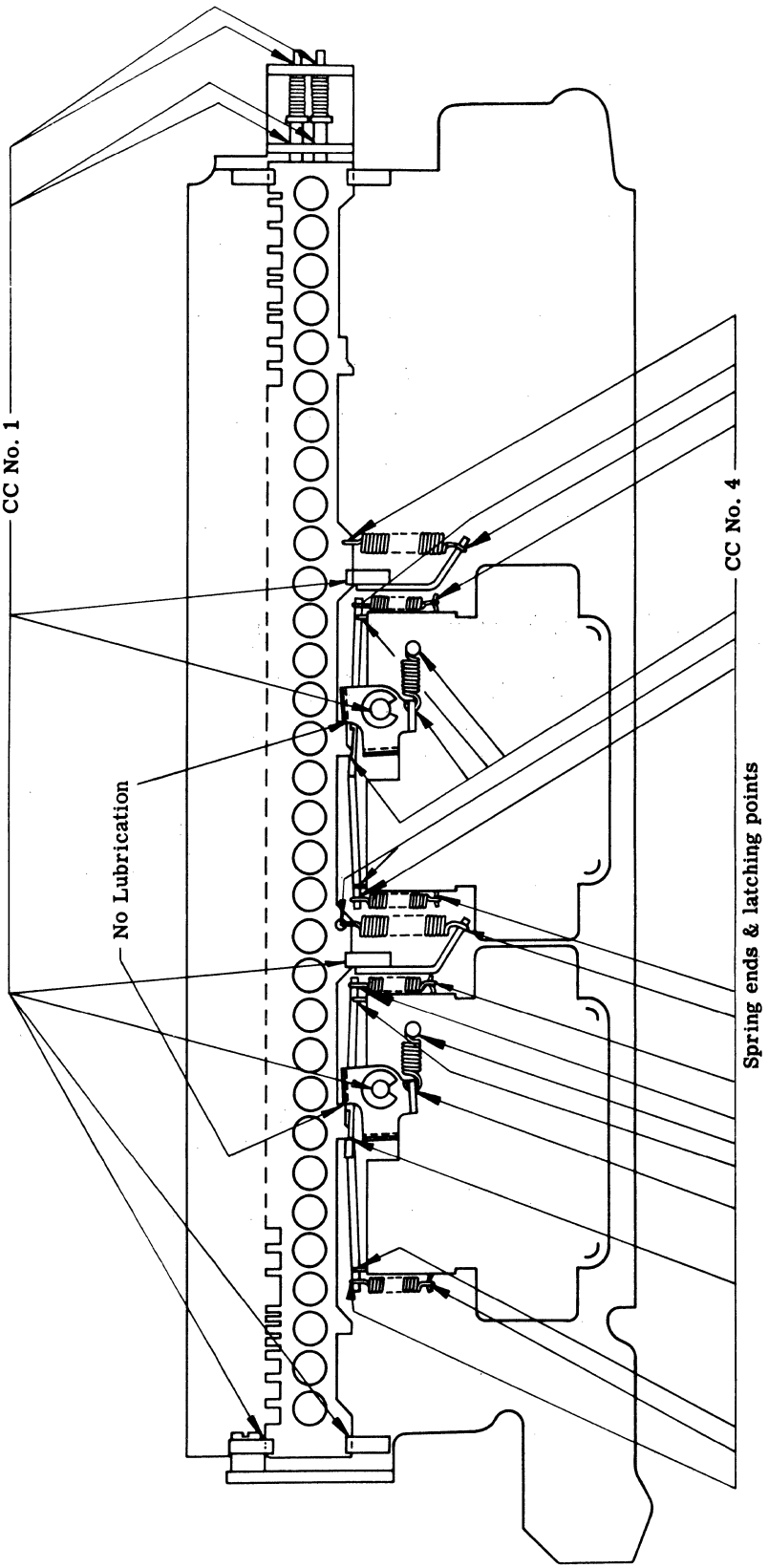

Figure 6-4 Magnet Assemblies, Slides & Plungers

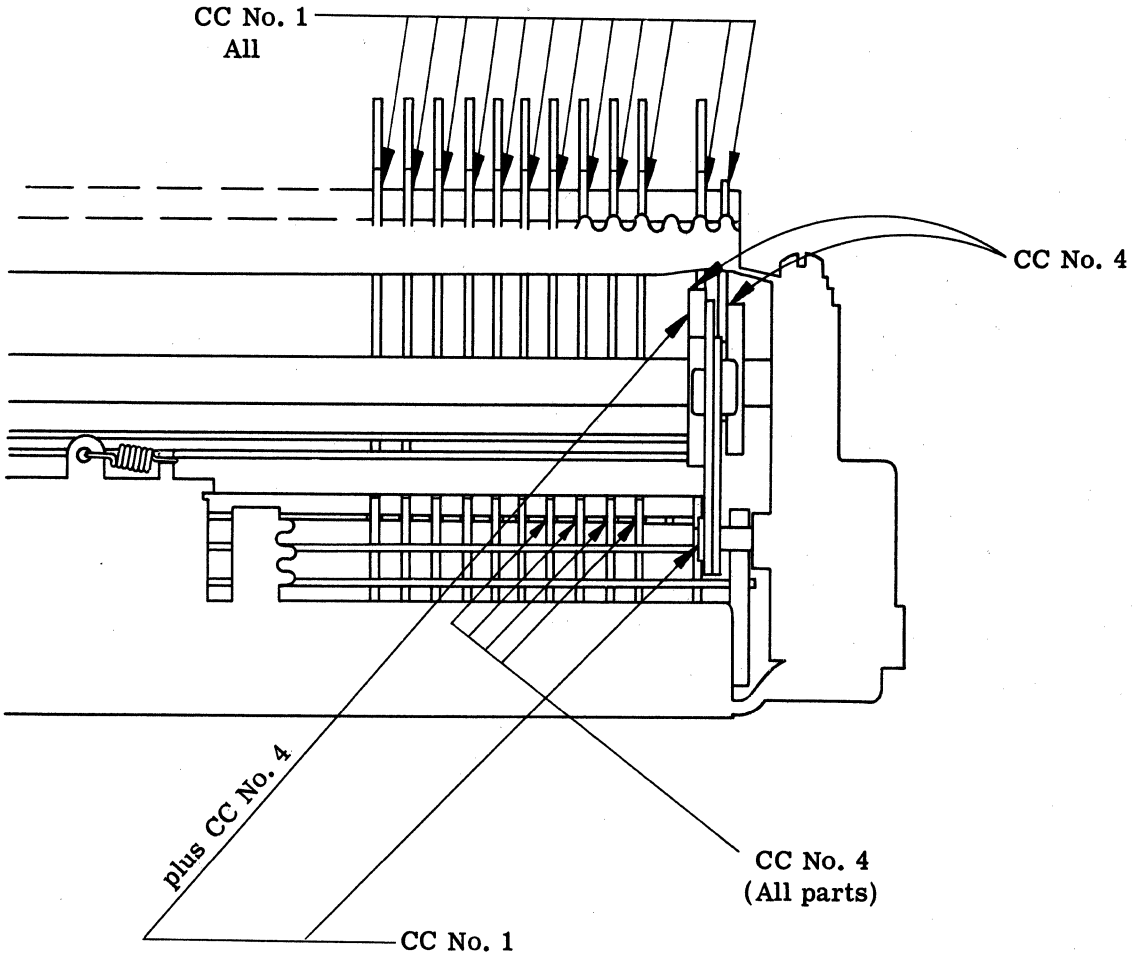

Figure 6-5 Permutation Slides, Cams & Seekers

DOUBLE READER

The lubrication points for the various component parts of the double reader (used on the Justowriter Reproducer) are shown on figures 7-1 through 7-6.

The following points should be lubricated with C. C. lubricant number 4: all cam surfaces, feed pawls, ratchet wheels, detents, operating bail contact surfaces, spring ends and latching surfaces.

The cam roller bearings should be lubricated with C. C. lubricant number 1, then follwed with C. C. lubricant number 4.

All other moving parts pivots, bearings and combs not otherwise shown should be lubricated with C. C. lubricant number 1.

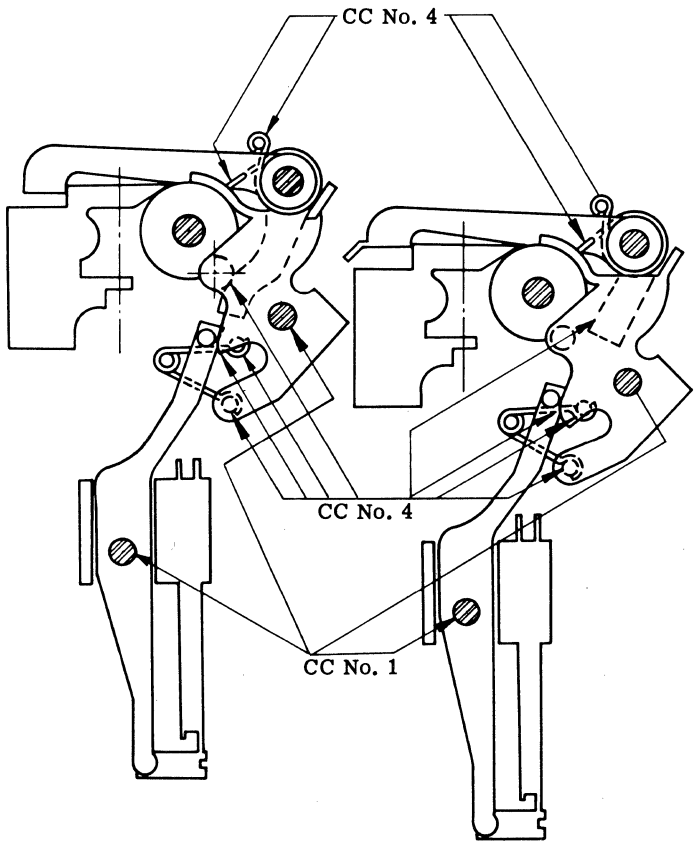

Figure 7-1 Tape Hold Down Mechanism

Double Reader

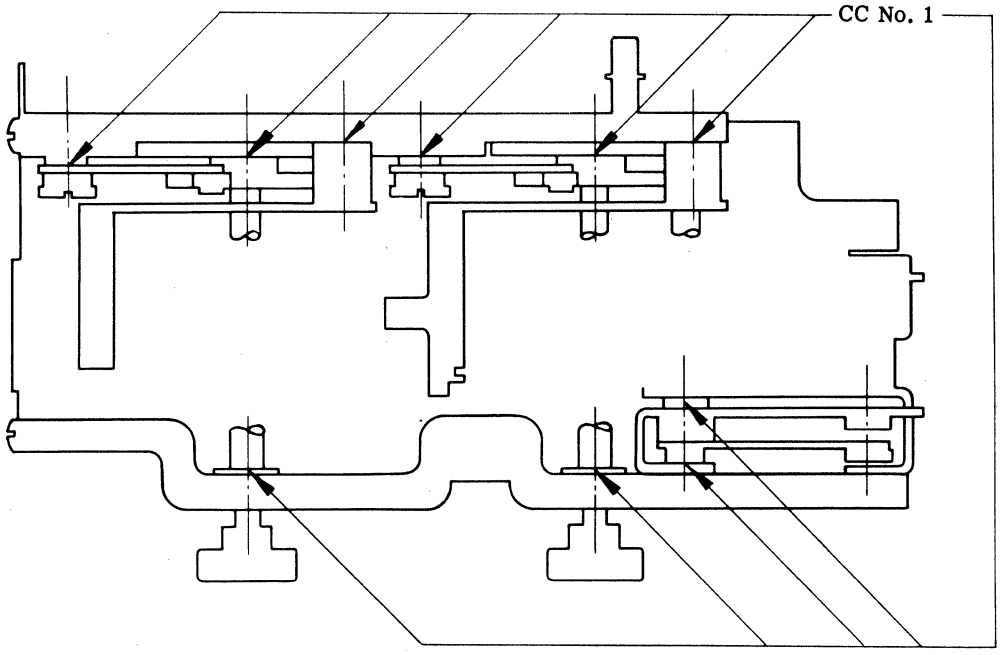

Figure 7-2 Double Reader (Top)

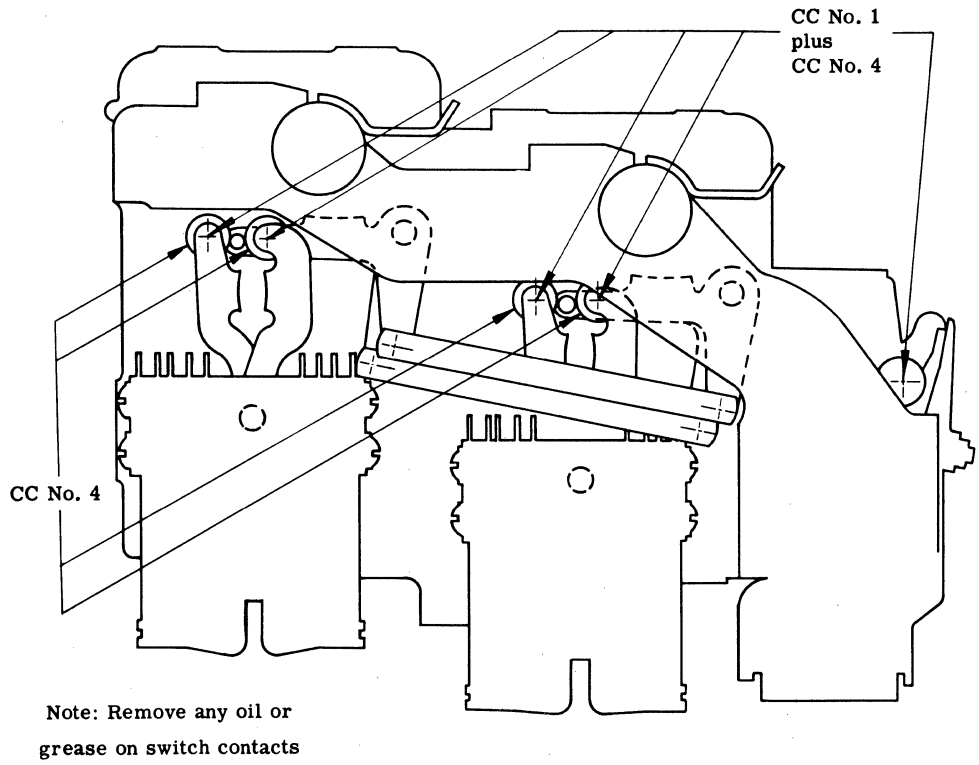

Figure 7-3 Double Reader (Left Side)

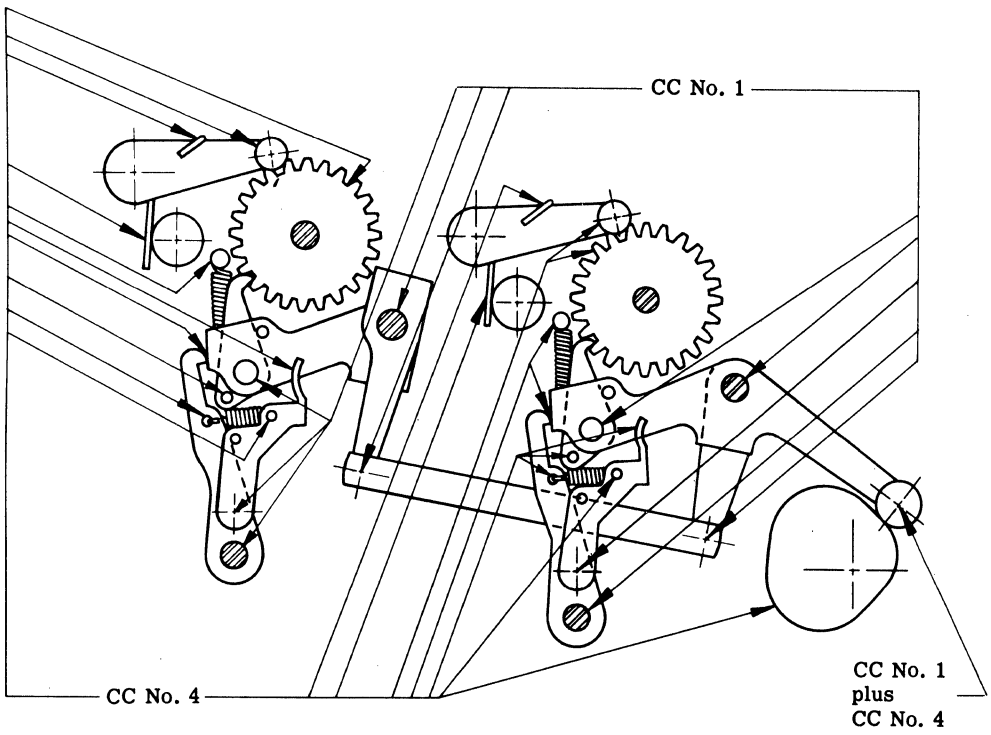

Figure 7-4 Tape Feed Mechanism

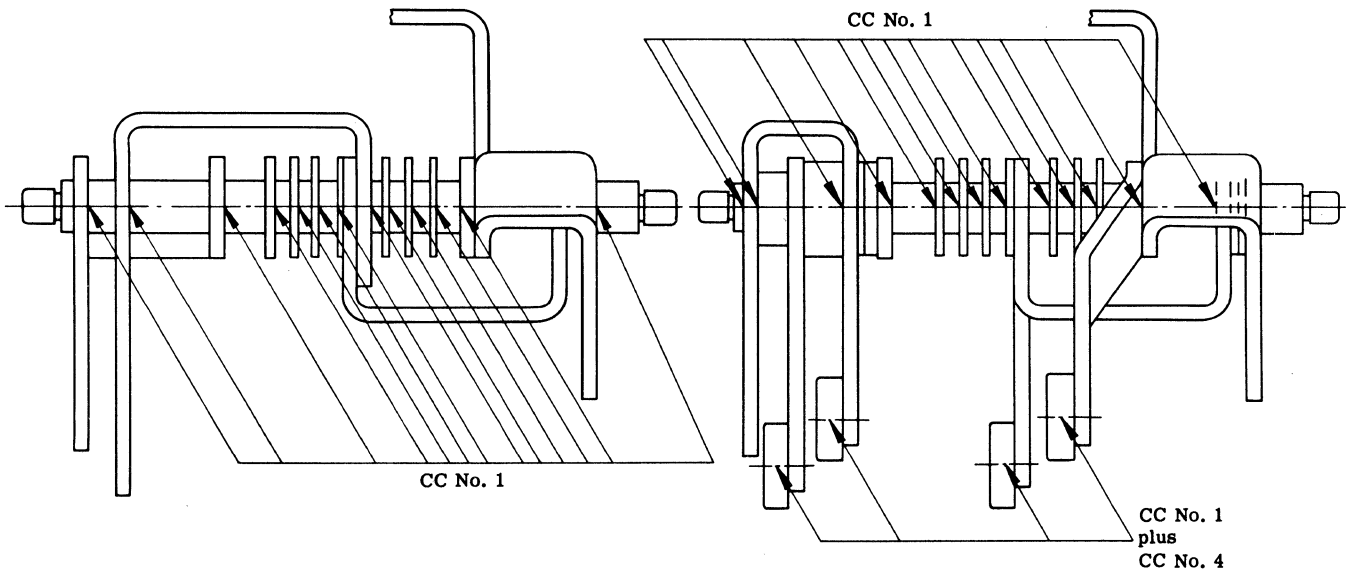

Figure 7-5 Interposer, Shaft & Operating Arms

Double Reader

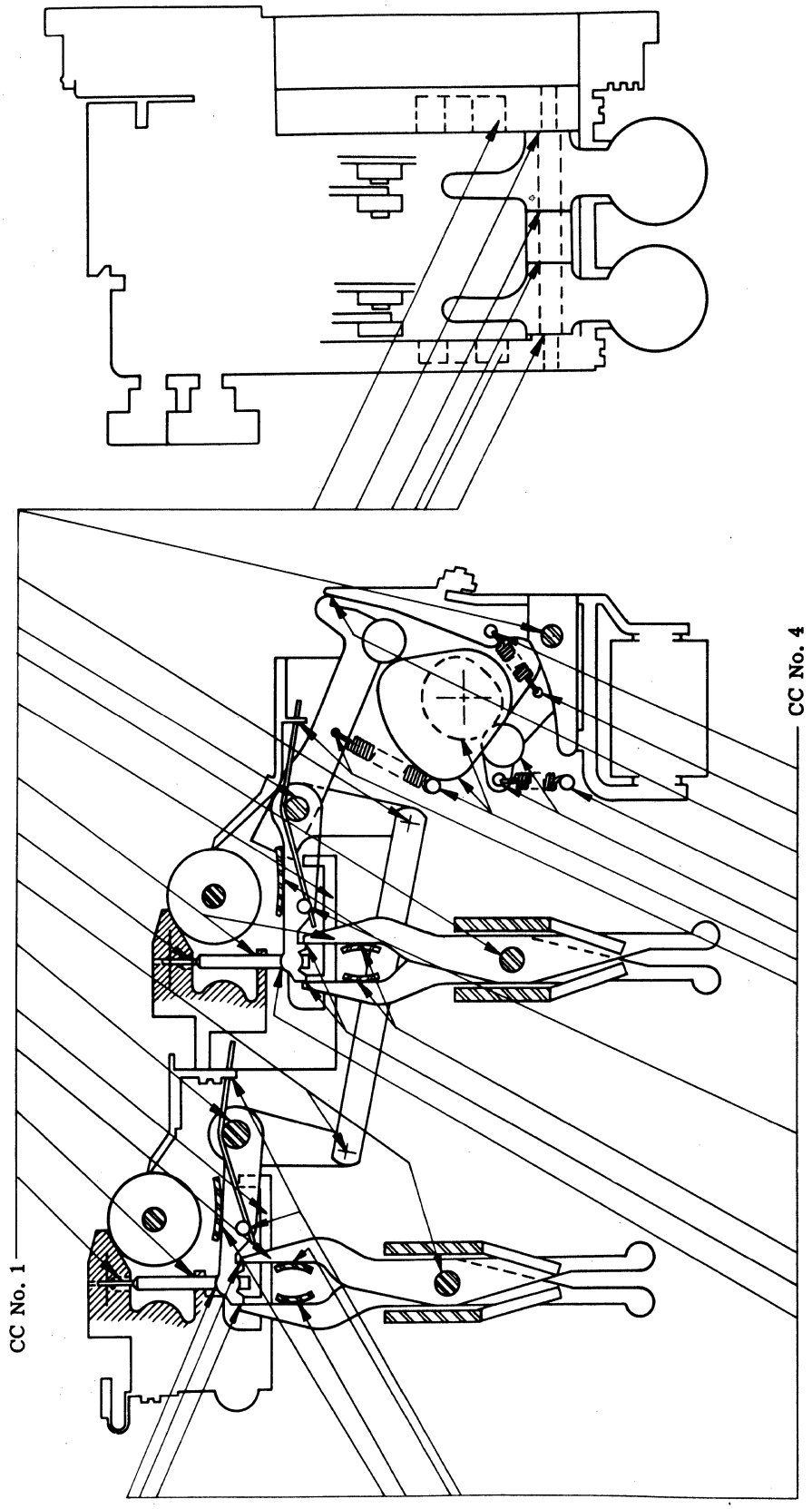

Figure 7-6 Pin & Contact Operating Mechanism

COMPUTER

The lubrication points for the various components of the computer (used on the Justowriter Recorder) are shown in figures 8-1 through 8-5.

The teeth on the seeker bail assembly, and all spring ends should be lubricated with C. C. lubricant number 4.

All pivots, bearings and combs not otherwise shown should be lubricated with C. C. lubricant number 1.

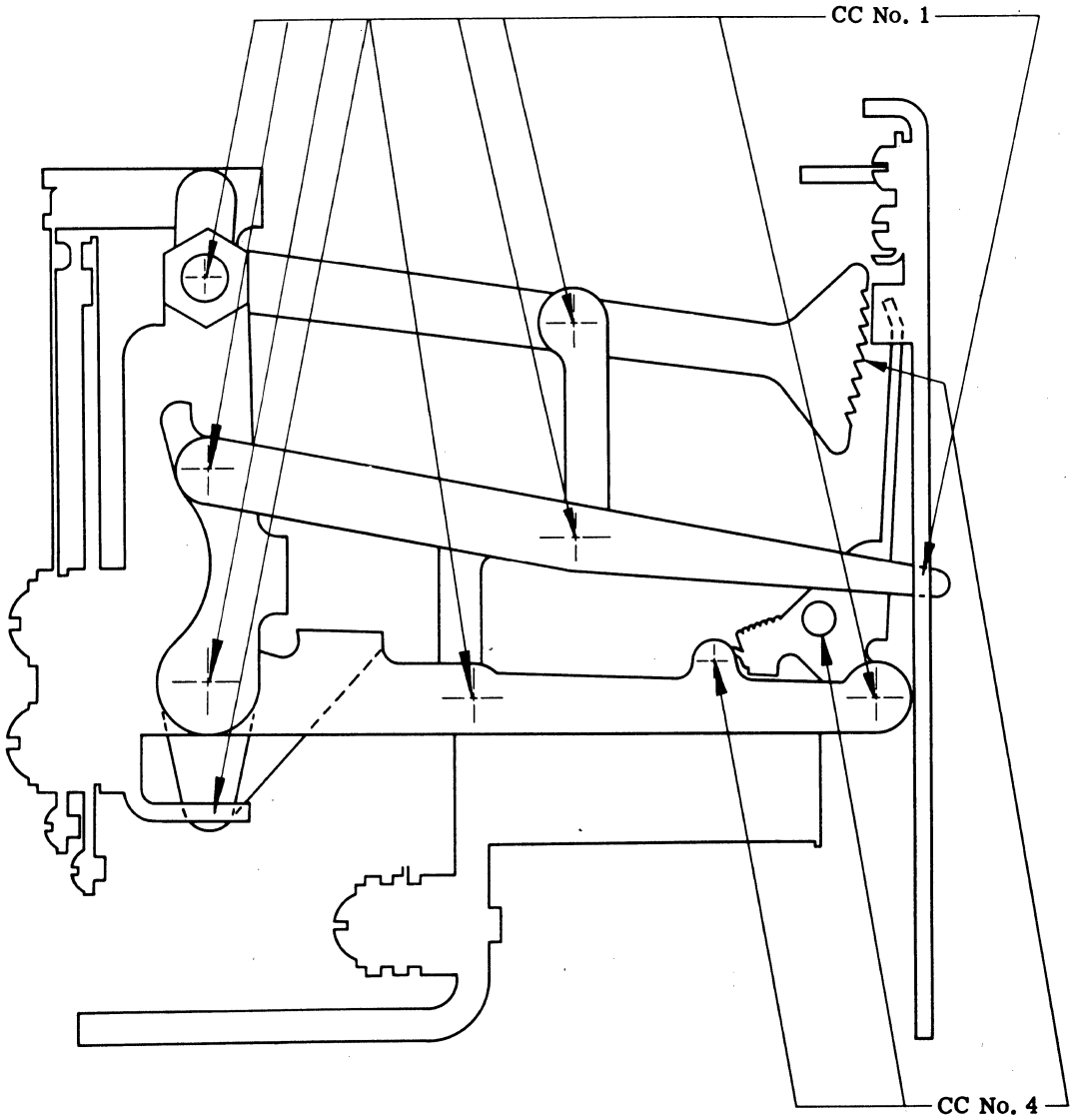

Figure 8-1 Computer (Left Side)

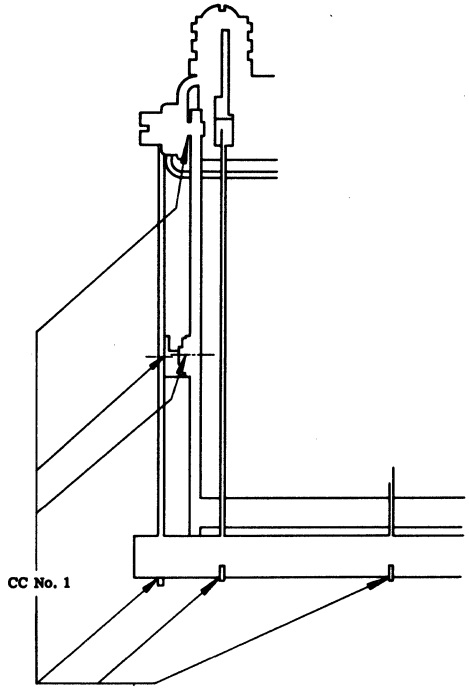

Figure 8-2 Seeker, Seeker Bail & Zone Arm

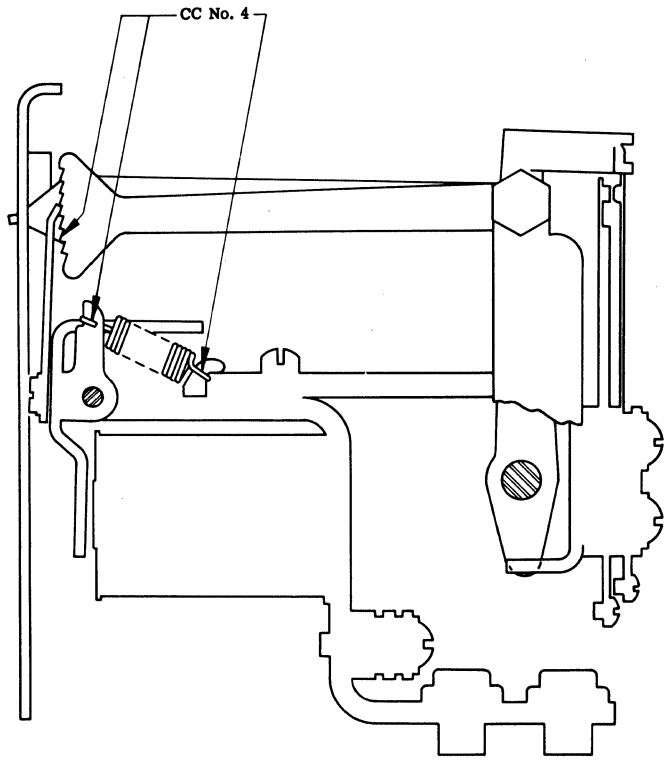

Figure 8-3 Computer (Right Side)

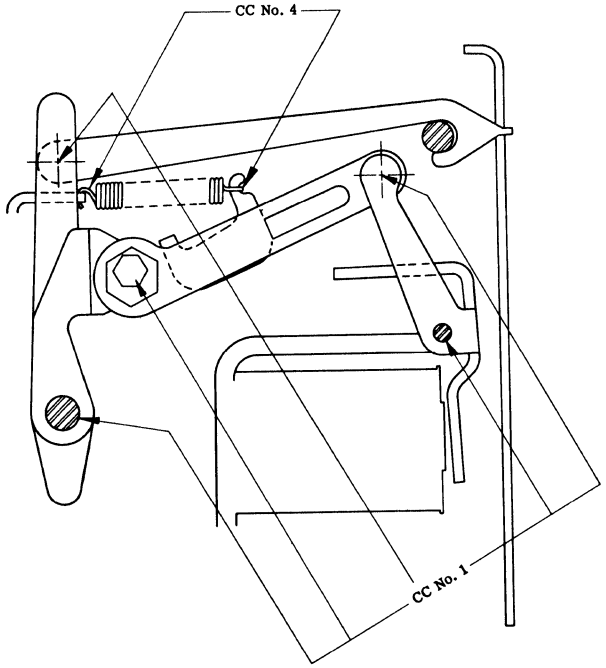

Figure 8-4 Computer (Cutaway-Left Side)

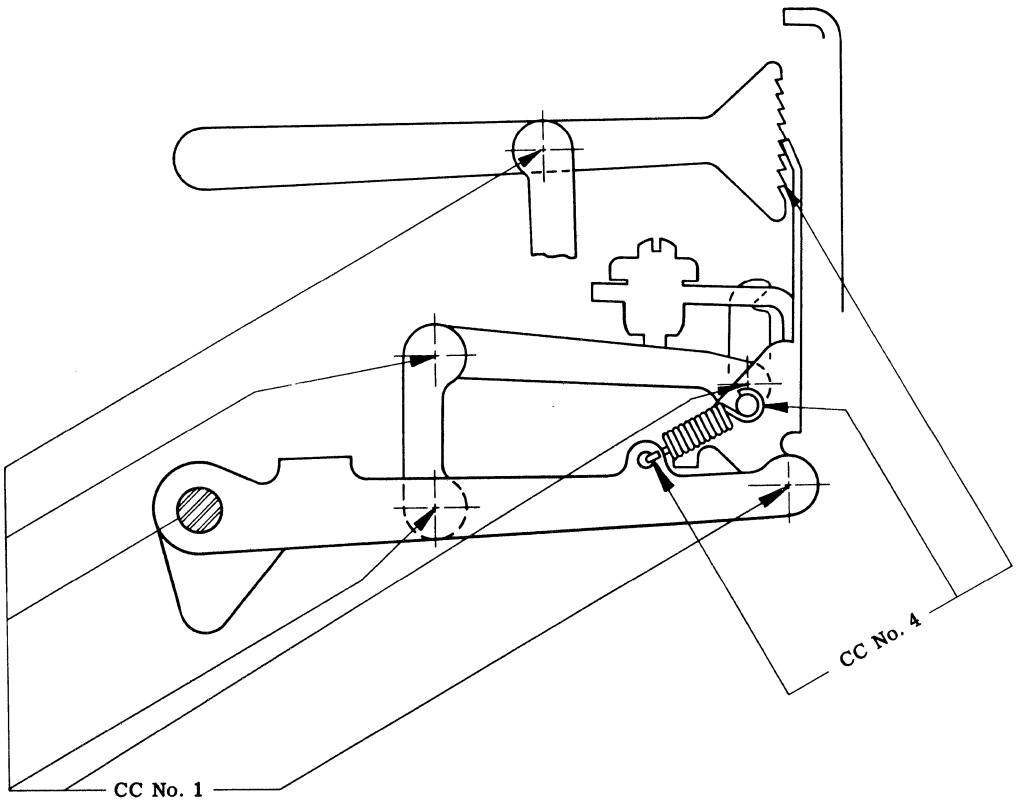

Figure 8-5 Indexing Mechanism

HOLE COUNT RELAY

The lubrication points for the various components of the hole count relay (used on the Justowriter Recorder and Recorder-Reproducer) are shown in Figures 9-1.

The pivot points of the Hole Count Relay armature and feed pawl should be lubricated with C.C. lubricant number 1. All other points shown should be lubricated with C.C. lubricant number 6.