

Brooklyn Hts.

City Engineers Office
City Hall, San Diego, Cal.

400
LEVEL

F.B. 446

Return to City Engineers Office
City Hall, San Diego, Cal.

Cook's Quality

Published by H. S. CROCKER COMPANY, Stationers, Drawing Materials, and Mathematical Instruments, San Francisco.

Table showing the difference of latitude and departure in running 80 chains at any course from 1 to 60 minutes.

MINUTES.	LKS.	MINUTES.	LKS.	446	LKS.
1	2 $\frac{1}{2}$	21	49	41	95 $\frac{1}{2}$
2	4 $\frac{1}{2}$	22	51 $\frac{1}{2}$	42	98
3	7	23	53 $\frac{1}{2}$	43	100 $\frac{1}{2}$
4	9 $\frac{1}{2}$	24	56	44	102 $\frac{1}{2}$
5	11 $\frac{1}{2}$	25	58 $\frac{1}{2}$	45	105
6	14	26	60 $\frac{1}{2}$	46	107 $\frac{1}{2}$
7	16 $\frac{1}{2}$	27	63	47	109 $\frac{1}{2}$
8	18 $\frac{1}{2}$	28	65 $\frac{1}{2}$	48	112
9	21	29	67 $\frac{1}{2}$	49	114 $\frac{1}{2}$
10	23 $\frac{1}{2}$	30	70	50	116 $\frac{1}{2}$
11	25 $\frac{1}{2}$	31	72 $\frac{1}{2}$	51	119
12	28	32	74 $\frac{1}{2}$	52	121 $\frac{1}{2}$
13	30 $\frac{1}{2}$	33	77	53	123 $\frac{1}{2}$
14	32 $\frac{1}{2}$	34	79 $\frac{1}{2}$	54	126
15	35	35	81 $\frac{1}{2}$	55	128 $\frac{1}{2}$
16	37 $\frac{1}{2}$	36	84	56	130 $\frac{1}{2}$
17	39 $\frac{1}{2}$	37	86 $\frac{1}{2}$	57	133
18	42	38	88 $\frac{1}{2}$	58	135 $\frac{1}{2}$
19	44 $\frac{1}{2}$	39	91	59	137 $\frac{1}{2}$
20	46 $\frac{1}{2}$	40	93 $\frac{1}{2}$	60	140

TABLE FOR RUNNING ON SLOPES.

In the following table the first column shows the angle, the second the number of links to be added to a chain on the slopes, to make one chain, horizontal measurement.

ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS
0		0		0		0	
4	0.24	11	1.88	18	5.14	25	10.54
5	0.38	12	2.24	19	5.76	26	11.26
6	0.55	13	2.63	20	6.42	27	12.24
7	0.76	14	3.06	21	7.11	28	13.37
8	0.98	15	3.53	22	7.85	29	14.34
9	1.24	16	4.02	23	8.64	30	15.47
10	1.55	17	4.56	24	9.47	35	22.07

Crocker Quality

LEVEL BOOK

No. 400



FROM Loring's Book Store

MANUFACTURED BY

A. S. Crocker Co.

SAN FRANCISCO and SACRAMENTO

6'-9 3/4

67 50 vix
66.67
69.17 89

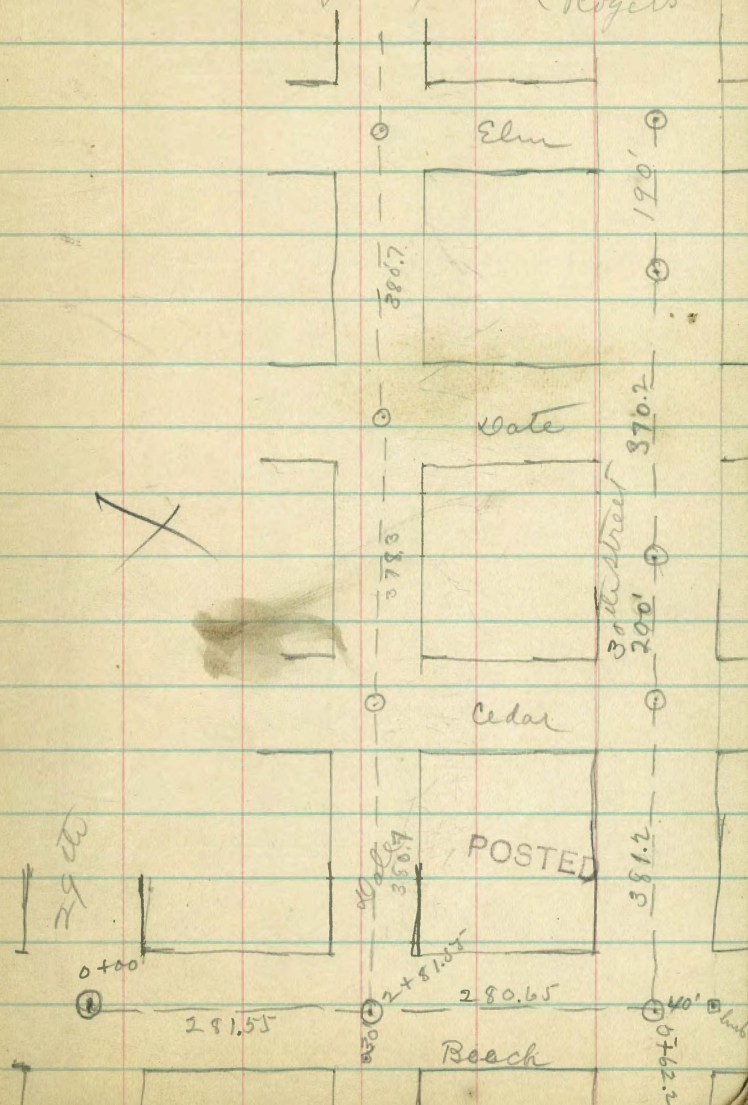
7630
6917
711
619

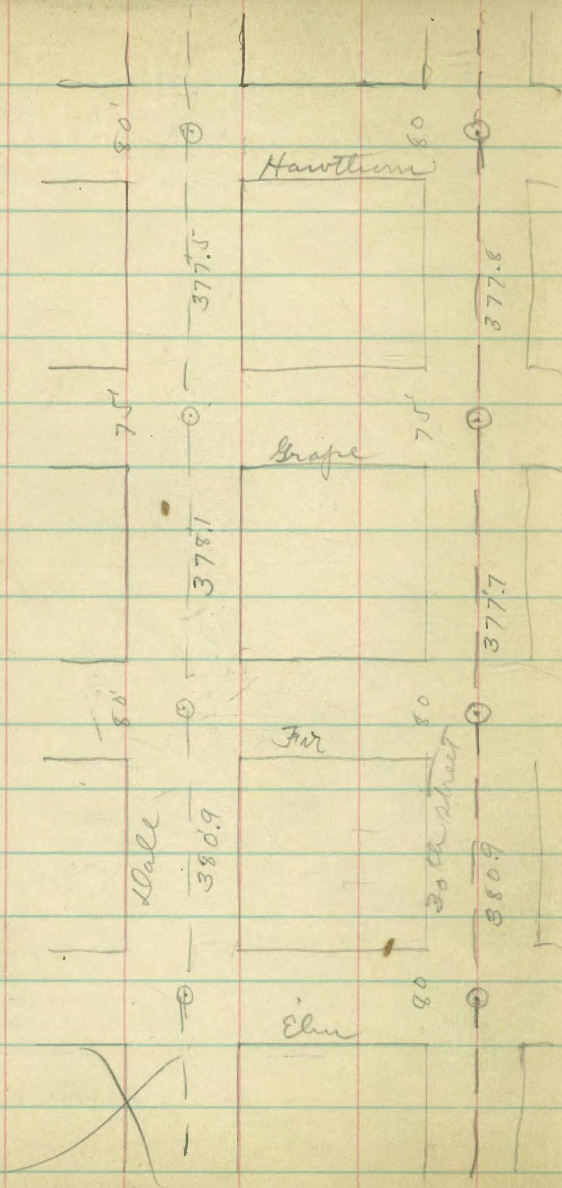
MICROFILMED

Del. 1964

285784 jump 30th NW Mon
286.241 Try " NE ^{RR} Spk Pale

Brookline/Hts. Sewer (Childs)
 Jan. 4/09 (Barber)
 Rogers

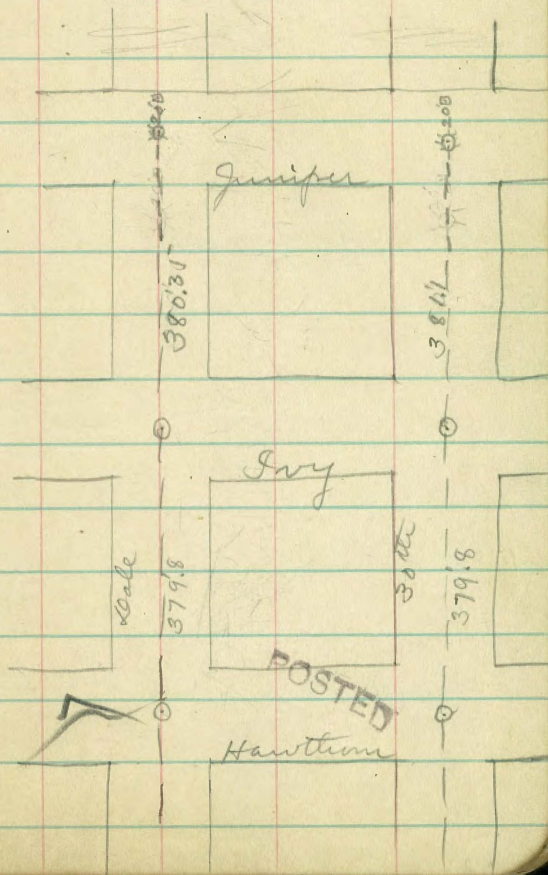




Jan 4/09

Lehields
Barber
Rogers

2



1 Beach Street line

Sta.		H.T.	Rock	Ground	Grade	cut		
0+00	M.H. center Beach + 29 th	217.01	11.6	205.4	√200.5	4.9	15.8 -9.6	207.21 B.M. 29 th + Beach
+50			10.4	206.6	√201.74	4.9	215.59 9.01	217.01
1+00			8.7	208.3	√202.98	5.3	224.60 207.21	207.21 7.41
+50	dp 1/2		7.2	209.8	√204.22	5.6	6.32	214.62 ✓ 200.5
2+00	dp 1/2		5.4	211.6	√205.47	6.1	213.53 ✓ 200.60	206.74 ✓ 11.79 ✓
+50			3.8	213.2	√206.71	6.5	12.73 ✓ 202.98	204.22 ✓ 9.31 ✓
+81.55	M.H. center Dale + Beach		3.3	213.7	√207.5	6.2	10.55 ✓ 205.47	207.50 ✓ 6.03
3+00			2.8	214.2	√207.95	6.3	6.82	213.23 B.M. 6.17 ✓ 219.40 ✓
+50	dp 1/2		1.42	215.59	√209.20	6.4	207.95 ✓ 11.45	207.95 ✓ 11.45 ✓ 209.20 ✓ 70.20 ✓
4+00	dp 1/2	224.60	7.3	217.3	√210.45	6.9	223.29	
+50			5.6	219.0	√211.70	7.3	1.28 ✓ 224.57	212.95 ✓ 71.62 ✓
5+00			4.0	220.6	√212.95	7.7	214.5 ✓ 10.07 ✓	211.70 ✓ 72.87 ✓
+50			2.7	221.9	√214.20	7.7	214.03 ✓ 10.54 ✓	
+62.2	M.H. center Beach + 30 th		2.4	222.2	√214.5	7.7		

Jan 4/09
 Childs
 Barber
 Rogers

POSTED

30th Street line

June 5/09
 Childs Barber 4
 Rogers
 30th St

Sta.	H.I.	Rod	Ground	Grade	cut	
						224.07 B.M. Cedar
6+00	236.26	14.0	222.3	✓ 214.88	7.4	1279 236.26 ✓ 223.29 6.97 3.67 224.07 226.96 ✓ 230.14 ✓ 214.99
+50		13.9	222.4	✓ 215.38	7.0	11.97 ✓ 224.07
7+00		13.6	222.7	✓ 215.88	6.8	224.07 4.72
+50	1% g.	13.3	223.0	✓ 216.38	6.6	4.68 228.79 ✓ 218.3
8+00		13.3	223.0	✓ 216.88	6.1	228.75 230.49 ✓ 215.88 218.38 13.57 10.41
+50		12.9	223.4	✓ 217.38	6.0	215.88 217.88
9+00		12.9	223.4	✓ 217.88	5.5	12.87 10.91 ✓ 216.38 217.38 ✓ 12.37 11.41
+43.4	M.H. center 30th + cedar	12.6	223.7	✓ 218.3	5.4	212.88 224.07 11.87 6.45 ✓
+50		12.9	223.4	✓ 218.38	5.0	212.63 230.52 H.I. 19.89 218.38 12.14 ✓
10+00	1/4%	12.4	223.9	✓ 219.00	4.9	220.25 219.0 10.27 ✓ 11.52 ✓
+50		12.3	224.0	✓ 219.63	4.4	220.80 224.20 9.72 ✓ 6.82
11+00		11.2	223.1	✓ 220.25	4.9	221.20 236.56 9.32 5.42 ✓
+43.4	M.H. bet. cedar + route	230.14	8.4	226.7	5.9	3.32 ✓ 242.28 ✓ 240.23 227.20 227.20 13.03
+50		236.26	9.2	227.1	5.9	
12+00	6% g.		6.1	230.2	6.0	
+50			2.2	234.1	6.9	

30th Street

Jan 5/09
 Childs
 Barber 5
 Rogers

Sta.		H.I.	Rod	Ground	Grade	cut			
13+00		248.87	11.6	237.3	✓230.20	7.1		236.86	B.M. date
+50			10.5	238.4	✓233.20	5.2	240.23	12.01	+30 th
14+00	6% g.		9.6	241.3	✓236.20	5.1	230.20	248.87	
+50			3.8	245.1	✓239.20	5.9	10.03	257.23	B.M. Elm
15+00			0.2	248.7	✓242.20	6.5	233.20	0.28	
+13.6	M.H. bet. route & Elm	257.51	7.6	249.9	✓243.00	6.9	270.28	257.51	
+50			6.1	251.4	✓244.46	6.9	7.03	13.05	257.23
16+00			4.5	253.0	✓246.46	6.5	236.86	270.28	0.91
+50	4% g.		2.8	254.7	✓248.46	6.2	10.46	7.03	259.04
17+03.6	M.H. center 80 th & Elm.		1.6	253.9	✓250.6	5.3	239.20	239.20	248.46
+50		270.28	13.8	256.5	✓252.20	4.3	247.32	8.12	9.58
18+00			12.0	258.3	✓253.94	4.4	236.20	11.12	246.46
+50	3 1/2% g.		10.2	260.1	✓255.69	4.4	11.12	7.13	11.58
19+00			8.2	262.1	✓257.44	4.7	257.23	0.91	250.6
+50			6.5	263.8	✓259.19	4.6	10.16	0.91	7.44
20+00			4.5	265.8	✓260.94	4.9	267.39	253.74	252.20

30th Street

Jan 8/09

Childs
Barber
Rogers 6

Sta.	H.I.	Ref	Ground	Grade		
20+50	270.28	3.1	267.2	√262.69	4.5	267.39V 262.69 4.70
+84.5	M.H. center 30th + Fin	2.6	267.7	√263.90	3.8	268.08 8.02 276.61 B.M. Grapel
21+00		2.3	268.0	√264.21	3.8	275.08V 263.90 11.18V 284.63
+50		1.4	268.9	√265.22	3.7	264.21 10.87 268.23
22+00	270.2	0.1	270.2	√266.22	4.0	266.22 8.86 270.24
+50	278.20	7.0	271.2	√267.23	4.0	270.24 5.84 4.84
23+00	284.63	12.2	272.4	√268.23	4.2	276.64 4.41 281.16V 271.25 9.91
+50		11.2	273.4	√269.24	4.2	271.50 9.66V 272.88 8.28
24+00		10.2	274.4	√270.24	4.2	273.38 7.78V
+50		9.1	275.5	√271.25	4.3	
+62.2	M.H. center 30th + Grapel	9.0	275.6	√271.50	4.1	
25+00		8.6	276.0	√271.88	4.1	
+50		8.0	276.6	√272.38	4.2	
26+00	1%	7.4	277.2	√272.88	4.3	
+50		6.9	277.7	√273.38	4.3	
27+00		6.2	278.4	√273.88	4.5	

POSTED

30th Street

Jan. 8/09

Hehills
Barber
Rogers

Sta.		H.I.	Rod	Ground	Grade	cut		
							284.47	
27+50	1%	284.63	5.5	279.1	✓274.39	4.7	280.10	5.52
							4.21	290.03
28+00			5.0	279.6	✓274.89	4.7	285.31	274.89
							273.88	10.42
+40	M.H. center 30th + Hawthorn		4.4	280.2	✓275.30	4.9	11.43	275.30
							274.39	10.01
+50			4.3	280.3	✓275.40	4.9	10.92	275.40
							275.90	9.91
29+00			3.6	281.0	✓275.90	5.1	9.41	281.51
							271.90	276.40
+50			3.0	281.6	✓276.40	5.2	9.61	277.40
							276.90	277.90
30+00	1%		2.4	282.2	✓276.90	5.3	8.61	277.40
							278.40	279.10
+50			1.8	282.8	✓277.40	5.4	7.11	286.24
							492	1226
31+00			1.3	283.3	✓277.90	5.4	291.16	279.31
							492	279.81
+50			0.6	284.0	✓278.40	5.6		279.81
								280.31
32+00			0.16	284.47	278.90	5.6		280.31
								280.81
+19.8	M.H. center 30th + soy.	290.03	5.2	284.8	279.10	5.7		280.81
+50			4.7	285.3	279.31	6.0		280.81
33+00	1%		4.4	285.6	279.81	5.8		280.81
+50			3.9	286.1	280.31	5.8		280.81
34+00			3.1	286.4	280.81	6.1		280.81

POST
Grade Stakes by Juniper
Hatch, Moore, Doziel,
3/26/09

30th Street

Jan. 9/09

Blills Barber Rogers 8

Sta	H.I.	Rod	Ground	Grade	Cut	291.16 HI	281.31 9.85	281.51 9.35
34+50	290.03	2.6	287.4	281.31	6.1		282.31 8.85	282.83 8.33
35+00		2.0	288.0	281.81	6.2			
+50.0	293.56	4.9	288.7	282.31	6.4			
36+00.9	F.T. Centerpin	4.5	289.1	282.81	6.3			

POSTED

S Dale Street Sewer

Sta.		H.I. Rod	Ground
0+00	M.H. center Dale + Beech	219.24	213.7
+50		4.7	214.5
1+00		5.3	213.9
+50		4.4	214.8
2+00	do	4.6	214.6
+50		4.5	214.7
3+00		4.3	214.9
+50		3.3	215.9
+80.7	M.H. center Dale + cedar.	3.2	216.0
4+00		3.3	215.9
+50		1.1	218.1
5+00	do	227.20	6.8 220.4
+50	do	5.2	222.0
6+00		1.6	225.6
+50		240.40	11.6 228.84
7+00		7.6	232.8

Jan 11/09

Grade	cut		
207.5	6.2	207.21 12.03 219.24	217.04 10.16
208.0	6.5	5.38	217.30 H.I. 0.05
208.5	5.4	213.23 18.61 208.0	227.15 13.25
209.0	5.8	213.23 B.M. 6.68	240.40 217.04
209.5	5.12	219.91 210.0	209.0 5.60 222.64
210.0	4.7	9.91 209.5	208.5 10.47 218.95
210.5	4.4	10.41	211.30 3.69 216.69
211.0	4.9	11.34	11.34 5.95 214.43
211.3	4.7	11.64	11.64 3.21 221.21
212.17	3.7	12.14	210.5 1.43 221.21
214.43	3.7		0.23 222.41 9.45
216.69	3.7		210.86 223.47
218.95	3.1		7.39 221.21
221.21	4.4		9.65 202 228.04
223.47	5.3		
225.73	7.1		

POSTED

JR

Dale Street

Jan. 11/09 } Shields
Barber 10
Rogers

Sta.	H.I.	Rod	Ground	Grade	cut		
7+50	240.40	5.7	234.7	√227.99	6.7	228.84 240.40 10.10 0.21 238.94 ✓ 240.19 225.73 12.36 13.21 212.58 ✓	
+59	M.H. center + date	5.3	235.1	√228.4	6.7	227.99 231.13 ✓ 10.95 7.81	
8+00		3.9	236.5	√229.63	6.9	228.40 ✓ 236.86 B.M. date 10.54 8.58 229.63 245.44 ✓ 9.31 232.63 12.81 103	
+50		2.4	238.0	√231.13	6.9	234.13 234.13 11.31 11.31	
9+00		0.9	239.5	√232.63	6.9	235.63 234.13 9.81 11.31	
+50	3%	252.55	11.8	240.8	√234.13	6.7	235.63 234.13 9.81 11.31
10+00		10.6	242.0	√235.63	6.4	337.13 239.8 8.31 5.64	
+50		9.0	243.6	√337.13	6.3	238.63 239.95 6.81 5.49	
11+00		7.9	244.78	√338.63	6.1	242.95 241.45 J.P. 10.74 12.24	
+39.7	M.H. center + elev.	7.0	245.6	√239.8	5.8	243.70 242.20 9.99 71.49	
+50		7.0	245.6	√239.95	5.7		
12+00		6.3	246.3	√240.70	5.6		
+50	1 1/2%	5.4	247.2°	√241.45	5.8		
13+00		4.2	248.4	√242.20	6.2		
+50		3.6	249.0	√242.95	6.1		
14+00		3.2	249.4	√243.70	5.7		

POST-3

Dale Street

Jan 16/09 } Childs
Barber 11
Rogers.

Sta.	H.I.	Rod	Ground	Grade	cut			
14+50	252.55	2.5	250.1	√244.45	5.7	250	252.55 0.54	276.61
15+00		1.7	250.9	√245.20	5.7	5.00	252.01 J.P. 13.20 265.21 ✓ 0.10	1.04 277.65
+20.6	M.H. center scale & Fin.	1.4	251.2	√245.5	5.7		265.17 J.P. 12.46 277.57 ✓ 11.18	
+50		1.3	257.34	√246.83	4.5		1030 266.39 J.P. 206	
16+00		1.6	253.6	√249.09	4.5		3000 280.10 Hawthorn 1.86 287.96 ✓	
+50		9.0	256.2	√251.35	4.7		29.4 Feb 24/09 1470 1176 13230	49.7 243.5 1948
17+00		6.4	258.8	√253.61	5.2			2915
+50		3.9	261.47	√255.87	5.4		2036.9 ✓ 244.40 9.24 ✓	57.3 82 10 J.P.
19+00		1.2	264.0	√258.13	5.9		25134.026 1085 2.35 245.20 8.49 ✓	268.08 0.82 Feb 26/09
+50		11.18	266.47	√260.39	6.1		249.09 245.10 8.19 ✓	0.69 J.P.
+98.7	M.H. center scale & Slope	14.2	267.8	√262.6	5.2		251.31 - 281.50 2.38 246.79 6.90 ✓	268.08 0.82 268.90
19+50		13.6	268.4	√263.63	4.8		266.47 3.37 ✓	8.58 ✓ 269.25 13.03
20+00		12.6	269.4	√264.63	4.8		262.84 ✓ 8.04 261.40	269.25 7.78 264.73
+50		11.4	270.6	√265.64	5.0		261.40 27.83 J.P. 7.41 ✓	263.65 11.61 10.77
21+00		10.4	271.6	√266.65	5.0		355.87 275.24 ✓ 262.6 12.64	264.63 10.61 265.64
+50		8.9	273.1	√267.66	5.5		267.66 7.58 ✓	9.60 266.65 8.59

Dale Street

Jan 18/09

Childs
Barber 42
Rogers

Sta.		H.T.	Rod	Ground	Grade	cut		
22+00		281.96	7.7	274.3	✓268.67	5.6	275.24 ✓ 268.67	286.24 0.00
+50		212.0	6.4	275.6	✓269.68	5.9	6.57 ✓ 269.68 ✓	281.18 ✓ 9.30 ✓ 277.87 ✓
+76.2	M.H. center Dale & Hawthorn		5.5	276.5	✓270.20	6.3	5.56 ✓ 270.20 ✓	288.20 ✓ 6.96 ✓ 284.20 ✓
23+00			5.2	276.8	✓270.68	6.1	5.04 ✓ 270.68 ✓	271.68 ✓ 12.52 ✓
+50			4.3	277.7	✓271.68	6.0	4.56 ✓ 271.68 ✓	272.68 ✓ 11.52 ✓
24+00			3.5	278.5	✓272.68	5.8	7.52 ✓ 272.68 ✓	273.68 ✓ 10.52 ✓
+50			2.7	279.3	✓273.68	5.6	6.52 ✓ 273.68 ✓	274.68 ✓ 9.52 ✓
25+00	2%		1.8	280.2	✓274.68	5.5	6.40 ✓ 274.68 ✓	275.68 ✓ 8.52 ✓
+50	1		0.78	281.18	✓275.68	5.5	5.96 ✓ 275.68 ✓	278.74 ✓ 5.46 ✓
26+00		289.20	6.1	282.1	✓276.68	5.4	5.46 ✓ 276.68 ✓	279.34 ✓ 4.96 ✓
+50			5.2	283.0	✓277.68	5.3	4.96 ✓ 277.68 ✓	279.74 ✓ 4.46 ✓
+56.0	M.H. center Dale + 90y.		5.2	283.0	✓277.80	5.2		
27+00			4.5	283.7	✓278.24	5.5		
+50			4.0	284.2	✓278.74	5.5		
28+00	1%		3.5	284.7	✓279.24	5.5		
+50			2.8	285.4	✓279.74	5.7		

Wale Street

Jan. 18/09
 Childs
 Barber
 Rogers 13

Sta.	H.T.	Rock	Ground	Grade	cut	
29+00	288.20	2.2	286.0	280.24	5.8	289.20 B.M. 30 th 4.36 293.56 289.20 3.38 292.58 280.24 12.34 4.19
+50	1%	1.3	286.9	280.74	6.2	280.74 71.84
30+00	293.56	6.0	287.6	281.24	6.4	281.24 11.34
+36.35	J.P. Center	grupper	5.3	288.3	281.42	6.9 289.20 193.39 281.42 11.97

X

POSTED

2

Brooklin Hts. School lower 30th Street

16

Sta.	H.F.	Rod	Ground	Grade cut		
0+00	M.H. center Reach	229.05		√214.5		223.29 B.M. reach 5.76 229.05
+50			6.6	222.5	√214.75	7.8 4.14 227.83 214.75 13.08 215.00 12.83
1+00			6.4	222.7	√215.00	7.7 215.25 228.58 229.37 215.75 13.62
+50			5.7	223.4	√215.25	8.2 5.29 228.58 215.75 12.83
2+00			5.2	223.9	√215.50	8.4 216.00 12.58 216.00 12.58
+50			4.7	224.4	√215.75	8.7 216.50 12.08 217.00 11.58
3+00			4.1	225.0	√216.00	9.0 217.25 11.33 217.35 11.23
+50			3.6	225.5	√216.25	9.3 216.40 11.83 217.35 11.23
3+80.85	center ash		3.3	225.8	√216.40	9.4
4+00			3.4	225.7	√216.50	9.2
+50			4.1	225.0	√216.75	8.3
5+00			4.5	224.6	√217.00	7.6
+50			5.1	224.0	√217.25	6.8
+70.85			5.1	224.0	√217.35	6.7
6+20.85		190	5.3	223.4	217.60	5.8
+70.85		228.67	5.92	222.75	217.85	4.9
+90.85			6.1	222.6	217.95	4.7

POSTED

12
10
29
1954
Moore

Levels for drain from 30th L to
Concrete Bridge on Cemetery Road.

5241 ✓

Station	Offset	Station	Offset	Station	Offset	Station	Offset	Station	Offset
	4.8	79.15 ✓		79.97				81.0	64.62 74.3 +18"
0+00 =		Intersection of lines 55' S of N.W. 1/4 St (66.22) and 8.4' W of E.L. 50 th St	6.09	73.1	(6.1)	80	6.9	80.5	64.52 74.4 (11") 9.9
+25		Manhole No 1	6.51	66.12	72.7	6.6	80	80.0	64.42 74.4 10.0
50			6.38	66.02	72.8	6.8	75	79.2	64.32 74.6 (13.5) 10.3
75			6.20	65.92	73.0	7.1	5	78.8	64.22 74.8 (17") 10.6
100			6.11	65.82	73.0	7.2	20	78.6	64.12 75.1 (11") 11.0
125			6.01	65.72	73.1	7.4	40	78.2	64.02 75.1 11.1
150			5.86	65.62	73.3	7.7	70	77.7	63.92 75.1 (12") 11.2
175			5.75	65.52	73.4	7.9	6	77.4	63.82 75.3 (16") 11.5
200			5.63	65.42	73.6	8.2	20	6.40	63.72 76.0 (13.5) 12.3
225			5.56	65.32	73.6	8.3	40	6.29	63.63 76.1 (16") 12.5
250			5.40	65.22	73.8	8.6	50	6.27	63.62 76.1 (16") 12.5
275			5.29	65.12	73.9	8.8	75	6.33	63.52 76.1 (12") 12.6
300			5.18	65.02	74.0	9.0	7	6.72	63.42 74.3 (11") 12.9
325		Manhole No 2	5.14	64.92	74.0	9.1	25	5.57	63.32 76.8 (16") 13.5
350			5.20	64.82	74.0	9.2	50	5.14	63.22 77.3 (13.5) 14.1
375			5.15	64.72	74.0	9.3	75	5.01	63.12 77.4 (13.5) 14.3

7.95
5.12
2.83

2 90° right.
manhole No 3

	✓ 5247			+		
8		574	63.02	77.3	14.3 (3 1/2")	
25		502	62.92	77.4	14.5 (6")	
40		501	62.82	77.4	14.6 (7")	
75		477	62.92	77.6	14.9 (11")	
9		519	62.62	77.2	14.6 (7")	
25		519	62.52	77.2	14.7 (8")	
50		547	62.42	76.9	14.5 (6")	
75	omitted		62.32			
10		535	62.22	77.1	14.9 (11")	
24	2 90° left 112	(62.11) ✓ 7808	575	62.21	14.6 (7")	
50	Manhole No 4		160	62.02	76.5	14.5 (6")
75		207	61.92	76.0	14.1 (9 1/2")	
11		227	61.82	75.6	13.8 (7")	
25		274	61.72	75.3	13.6 (7")	
50		304	61.62	75.0	13.4 (5")	
75		350	61.52	74.6	13.1 (9 1/2")	
12		391	61.42	74.2	12.8 (3")	

	7805			+	
25		425	61.32	73.8	12.5 (2")
50		474	61.22	73.3	12.1 (5 1/2")
75		523	61.12	72.8	11.7 (5")
13		557	61.02	72.4	11.4 (2")
25		600	60.92	72.1	11.2 (19 1/2")
50	Manhole No 5	645	60.82	71.6	10.8 (6")
75		684	60.72	71.2	10.5
14		745	60.62	70.6	10.0 (8 1/2")
25		785	60.52	70.2	9.7 (3 1/2")
50		844	60.42	69.7	9.3
75		876	60.32	69.3	9.0 (6 1/2")
15		914	60.22	68.9	8.7 (5")
25		957	60.12	68.5	8.4
50		1011	60.02	68.0	8.0 (8 1/2")
75		1055	59.92	67.6	7.7 (3 1/2")
16		1100	59.82	67.1	7.3 (3")
25		1131	59.72	66.9	7.2

7808

60	018	✓	66.75	11.01	6.59.63	66.57	7.0	
25	< 1420	Left =	59.52	32.9	0.61	59.52	66.1	6.6
17			1.47		58.68	65.3	6.6	
17+20					58.00	6.1		
25			2.99		57.75	63.8	6.0	
60			4.30		56.50	62.0	6.5	
+60					56.00	5.3		
75			6.62		54.95	60.1	5.1	
19			5.63		53.20	58.1	4.9	
25			10.41		51.29	56.3	5.0	
50		✓	55.60	12.47	49.37	54.28	4.9	
75			3.19		47.16	52.4	4.9	
90			5.40		45.54	50.2	4.7	
+20					44.00	4.6		
25			7.25		43.86	48.3	4.4	
60			9.66		43.13	46.0	2.9	
75			12.50		42.41	44.8	2.4	
20	175	✓	44.89	12.46	41.69	43.10	1.4	
25			2.95		40.97	42.0	1.0	
59			4.02		40.00	40.9	0.9	

20+04 Concrete footing
20+24 concrete curb

Station indicated by
NG. Capra as end of Rpe.

4489

17

20+65	< 1423	Right	41.5		40.7
21			4.9		40.0
50			6.2		38.7
22			7.5		37.1
50			9.3		35.4
23			10.5		34.1
60		✓	12.2		32.5
70	1.67	33.44	13.10	21.79	
24			2.3		31.2
50			3.7		29.8
25			5.4		28.1
50			6.6		26.9
26			6.5		26.7
60			6.7		26.8
27			6.6		26.9
50			6.6		26.9
28			6.3		27.2
50			5.6		27.9
29	West end of Concrete curb		4.7		28.8

20+65 concrete curb

13 watch
13 more
19 Thinner

Chuck Lewis 30^{3/4} h.
To Cholla Valley - 30^{1/4} at Oriano

	H.I.	B.V.	Grade of pitch
4.6	79.13	74.97	
0+0	Maulhole No. 1	6.09	73.04 6622 6.82 10"
+25		6.51	73.62 6612 6.50 6"
+50		6.40	72.73 6602 6.71 8 1/2"
+75		6.21	72.92 6592 7.00 00"
1+00		6.13	73.00 6582 7.18 2"
25		6.02	73.11 6572 7.39 4 3/4"
50		5.87	73.26 6562 7.64 7 1/2"
75		5.80	73.33 6552 7.81 9 1/4"
2+00		5.63	73.50 6542 8.05 14"
25		5.57	73.56 6532 8.24 5"
50		5.48	73.75 6522 8.50 6 1/2"
75		5.30	73.83 6512 8.71 8 1/2"
3+00		5.17	73.96 6502 8.94 11 1/4"
2	Maulhole No. 2	5.13	74.00 6492 9.08 1"
50		5.18	73.95 6482 9.13 1 1/2"
75		5.15	73.95 6472 9.26 3"

Rev page 15

79.13

4+00	775	52.03	488	74.25	64.62	9.63 7 1/2"
25			767	74.36	64.52	9.84 10"
50			764	74.39	64.42	9.97 11 3/4"
75			764	74.59	64.32	10.27 3 1/4"
5+00			721	74.82	64.22	10.60 7 1/4"
25			694	75.09	64.12	10.97 11 3/4"
50			692	75.11	64.02	11.09 11"
75			691	75.12	63.92	11.20 2 1/2"
6+00			678	75.25	63.82	11.48 5"
25			604	75.99	63.72	12.27 5 1/2"
45	<	Maulhole No. 3	593	76.10	63.60	12.47 6"
50			590	76.13	63.62	12.51 6"
75			597	76.06	63.52	12.64 6 1/2"
7+00			577	76.26	63.42	12.84 10"
25			523	76.50	63.32	13.48 6"
50			479	77.24	63.22	14.02 00"
75			463	77.40	63.12	14.28 3 1/2"

	52.03			
5+00		4.78	77.25	63.02 14.23 ^{6"}
25		4.67	77.36	62.92 14.44 ^{5 1/4"}
50		4.62	77.39	62.82 14.57 ^{7 1/2"}
75		4.42	77.61	62.72 14.89 ^{10 3/4"}
9+00		4.56	77.17	62.62 14.55 ^{1 1/2"}
25		4.53	77.20	62.52 14.68 ^{8 1/2"}
50		5.12	76.91	62.42 14.49 ^{5"}
75				62.32
10+00		5.0	77.03	62.22 14.81 ^{9 3/4"}
25	1.00	5.90	76.63	62.12 14.51 ^{6"}
50	mauhole No 4	1.27	76.46	62.02 14.44 ^{5 1/4"}
75		1.76	75.97	61.92 14.05 ^{1 1/2"}
11+00		2.06	75.67	61.82 13.85 ^{3 1/4"}
25		2.41	75.32	61.72 13.60 ^{7 1/2"}
50		2.73	75.00	61.62 13.38 ^{4 1/2"}
75		3.18	74.55	61.52 13.03 ^{1 1/4"}
12+00		3.60	74.13	61.42 12.71 ^{8 1/2"}

30th R. drain to Chocoma Valley

19

	77.73			
25		3.94	73.79	61.32 12.47 ^{5 1/2"}
50		4.43	73.30	61.22 12.08 ^{1"}
75		4.92	72.81	61.12 11.69 ^{8 1/4"}
13+00		5.26	72.47	61.02 11.40 ^{5 1/2"}
25		5.69	72.04	60.92 11.12 ^{1 1/2"}
50	Mauhole No 5	6.15	71.53	60.82 10.76 ^{9"}
75		6.53	71.20	60.72 10.48 ^{6"}
14+00		7.12	70.60	60.62 9.98
25		7.56	70.17	60.52 9.65
50		8.13	69.60	60.42 9.18
75		8.45	69.28	60.32 8.96
14+99		8.83	68.90	60.22 8.68
25		9.36	68.47	60.12 8.34 ^{5"}
50		9.77	67.96	60.02 7.94
75		10.23	67.50	59.92 7.58
16+00		10.66	67.07	59.82 7.25
25		10.90	66.83	59.72 7.11

15

7773

150	203	62.57	1119	65.52	57.62	6.91
75	14306		245	66.12	57.52	6.60
17+00			323	65.24		
+25			486	63.71		
150			664	61.93		
75			897	60.10		
18+00			1049	58.08		
25	340	58.71	1226	56.31		
150			1445	54.26		
75			1632	52.39		
19+00			1848	50.23		
25			2035	48.33		
150	322	49.18	2277	45.94		

 $\frac{1}{15}$ Water
 1660 ft
 to Thomas

 Levels on line 5 East of Cr. line of Drain
 from K to L on 30th Street - 20

Station	Grade	Cut	Grade	Cut
8211	4.70	79.47	72.97	Grade Cut
N. line L Street	325 76.36	6.56	73.11	6.91
25		3.41	72.75	6.40
50		3.83	72.53	6.55
75		3.91	72.45	6.80
1		4.34	72.02	5.32
25		4.37	71.99	5.19
50		4.66	71.70	4.80
75		4.95	71.41	4.41
2		5.14	71.22	4.12
30		5.35	71.01	3.81
50		5.59	70.77	3.47
75		5.74	70.62	3.22
99.4 = S.K.		6.00	70.36	2.96

 Nail driven in E. side of Phone pole at
 Elevation 70.17 or 1 foot above Top of Catch basin

E. Hatch
 10' Horse
 10' Thomas

Levels for ditch from end of
 30' at drain pipe to Cholla Creek.
 Staked line 4' N of fence.
 Profiled " 10 " " " "

0.90 41.60 " " 40.7 Stake
 0.22
 0.21 top of fence post at 30.52 11.30 30.30
 570+0.0

0+00
 +25
 +50
 +75
 1
 +25
 +50
 +75
 2
 +25
 +50
 +75
 3
 +25
 +50

Staked Line

Staked Line	Red	Elev	Grade	#	6' North of Stake	Red	Elev
							21
	289	27.63	24.50	C 0.113	3.9	26.6	+2.10
	271	27.81	24.45	C 0.086	4.7	25.8	+1.36
	372	26.70	24.40	C 0.230	5.8	24.7	+0.80
	274	26.78	24.35	C 0.243	5.6	24.9	+0.55
	580	26.32	24.30	C 0.02	6.7	23.7	-0.60
	541	26.11	24.25	C 0.86	6.3	24.2	-0.05
	575	26.77	24.20	C 0.157	6.4	24.1	-0.10
	610	24.42	24.15	C 0.27	6.3	24.2	+0.05
	570	24.82	24.10	C 0.72	6.1	24.4	+0.30
	546	26.06	24.05	C 1.01	5.8	24.7	+0.05
	590	24.62	24.00	C 0.62	5.9	24.6	+0.60
	612	24.10	23.95	C 0.05	6.4	24.1	+0.05
	646	24.06	23.90	C 0.16	6.7	23.8	-0.10
	610	24.42	23.85	C 0.157	6.3	24.2	+0.35
	596	24.56	23.80	C 0.76	6.2	24.3	+0.50

2052

T.P. 542 29.98 596 29.56

+75

4

+25

+50

+75

5

+25

+50

+75

6

+25

+50

+75

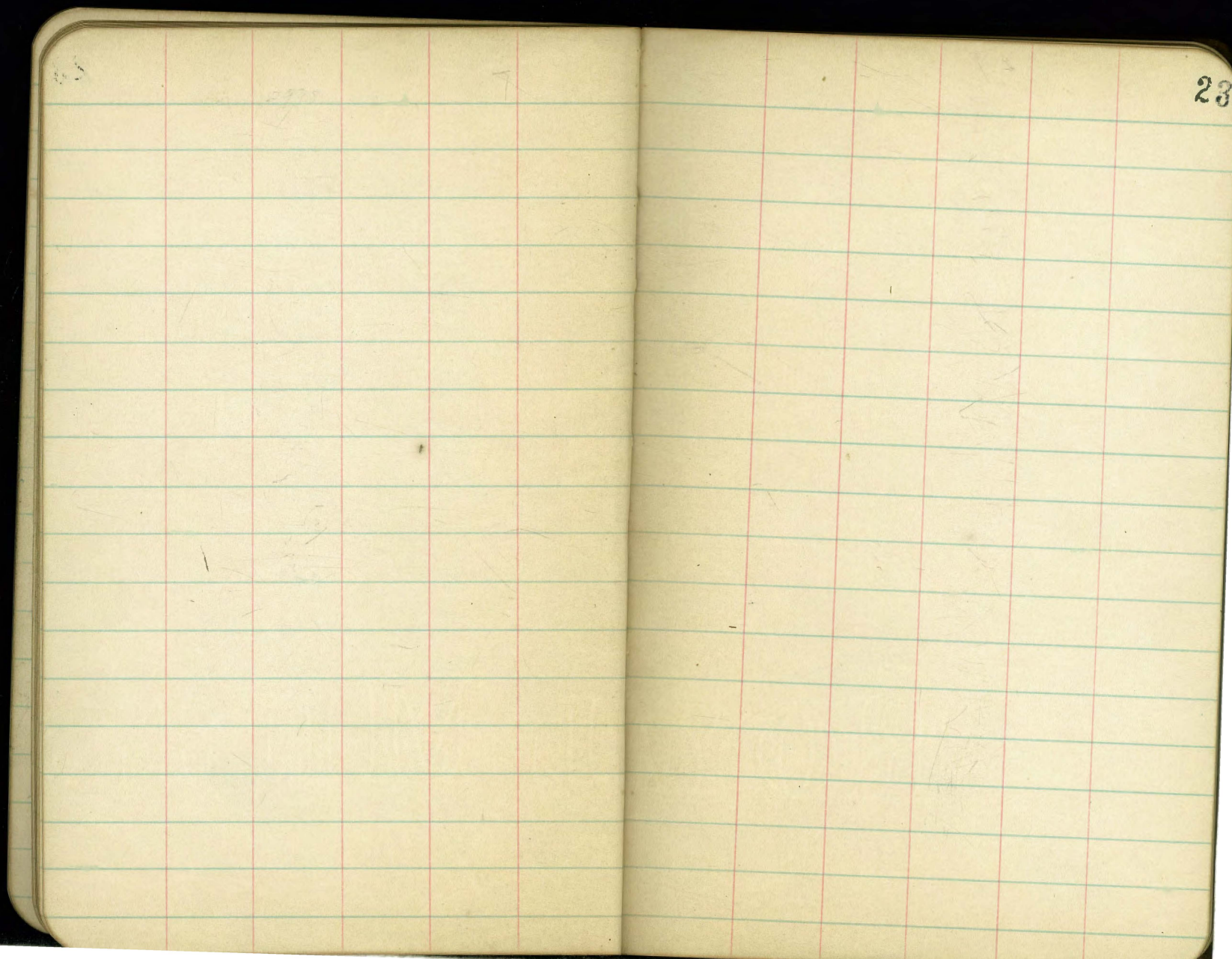
7

+75

+50

+75

Staked Line					6' North
Rod	EV	Grade	#	Rod	Elev.
535	24.63	23.75	+0.88	5.6	24.4
472	25.16	23.70	+1.46	5.3	24.7
461	25.37	23.65	+1.71	5.0	25.0
490	25.08	23.60	+1.48	4.8	25.2
480	25.18	23.55	+1.63	5.0	25.0
486	25.12	23.50	+1.62	5.0	25.0
487	25.11	23.45	+1.66	4.8	25.2
442	25.56	23.40	+2.16	5.0	25.0
520	24.78	23.35	+1.43	5.6	24.4
505	24.93	23.30	+1.63	5.2	24.8
515	24.83	23.25	+1.58	5.4	24.6
525	24.73	23.20	+1.53	5.3	24.7
676	23.22	23.15	+0.07	6.9	23.1
690	23.08	23.10	0000	6.4	23.6
590	24.08	23.05	+1.03	6.1	23.9
520	24.78	23.00	+1.78	5.5	24.5
964	20.34			9.0	21.0



23

Preliminary Line of Levels for sewer for University
 Place, beginning @ Essex 35' west of Herbert fence w
 on Essex To @ Richmond Thence s to @ Alley Thence n on Alley
 To F.T. 21' west of W.L. Richmond

B.M. B.P.M.V. UNIV AVE 2 BLD 301.73

B.M. 2.69 304.42

0+0 = 35' west of W.L. Herbert 6.9 297.15

0+25 7.2 297.7

50 7.3 297.1

75 7.6 296.8

1+0 7.8 296.6

1+25 8.0 296.4

1+50 8.3 296.1

75 8.6 295.8

2+0 8.8 295.6

25 9.0 295.4

50 9.3 295.1

75 9.6 294.8

8+0 9.9 294.5

25 10.00 294.4

50 10.5 294.1

75 10.5 293.9

9+0 10.7 293.7

25 10.7 293.7

50 10.6 293.8

75 9.7 294.7

5+0 7.5 294.9

5+31? @ Richmond 9.0 295.4

5+50 9.1 295.3

5+75 304.4 8.7 295.7

6+0 9.0 295.4

25 9.1 295.3

50 9.2 295.2

75 8.8 295.6

7+0 9.0 295.4

7+29 = @ Alley @ Richmond 8.5 295.9

7+50 9.2 295.2

7+85 = F.T. 21' west of W.L. Richmond 9.4 295.0

7+85 Grade of sewer = 290.0

Preliminary Line & Levels for sewer in University place Add.
 beginning - & Alley in G.R. 2 35' east of N.L. (Essex) Thence W.
 To F.T. & Alley 21' W of N.L. Richmond
 60' Essex to Richmond
 Herbert

B.M. = B.P. NW. Univ. Ave. Blvd	301.73	
B.M.	2.69	304.42
0+0		6.1 298.3
25		6.1 298.3
50		6.6 297.8
75		7.1 297.3
1+0		7.9 297.0
25		8.2 296.2
50		8.5 295.9
75		9.1 295.3
2+0		9.7 294.7
25		10.3 294.1
50		11.2 293.2
75		12.0 292.4
T.P.	294.34	14.61 292.81
2+95		3.6 290.7
3+0		4.9 289.4
25		10.2 284.1
3+41		14.3 280.0
50		13.5 280.8
75		7.1 287.2
4+0		2.9 291.4
T.P.	300.02	2.57 291.77

4+25	300.0	5.5	294.5
4+50		4.7	295.3
4+75		4.1	295.9
5+0		4.6	295.4
5+32 = E. Richmond		4.1	295.9
5+60		4.8	295.2
5+94 = F.T. 21' W of N.L. Richmond		5.0	295.0
5+94 = Grade of sewer			290.0

Levels for proposed Culvert

Blk 161 U.H.

Stone
Pavement
14' x 14' x 9"

7/13/76

SEDP

33.5

356.39

353.0

Polk +.52 md

356.4

350.9

Alley +0.00

5.5

+10 = FL Alley

6.4

350.0

+45

5.9

350.5

+60

6.0

350.4

+00

5.4

351.2

+30

5.2

351.2

+50

5.6

350.8

+54.5 = wedge sidewalk

6.22

350.2

+59.5 = E. v

6.35

350.0

+64 top conc curb

6.51

349.9

+64 = gutter on paving

7.10

349.3

Polk

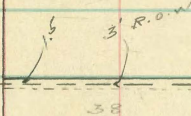
Ave

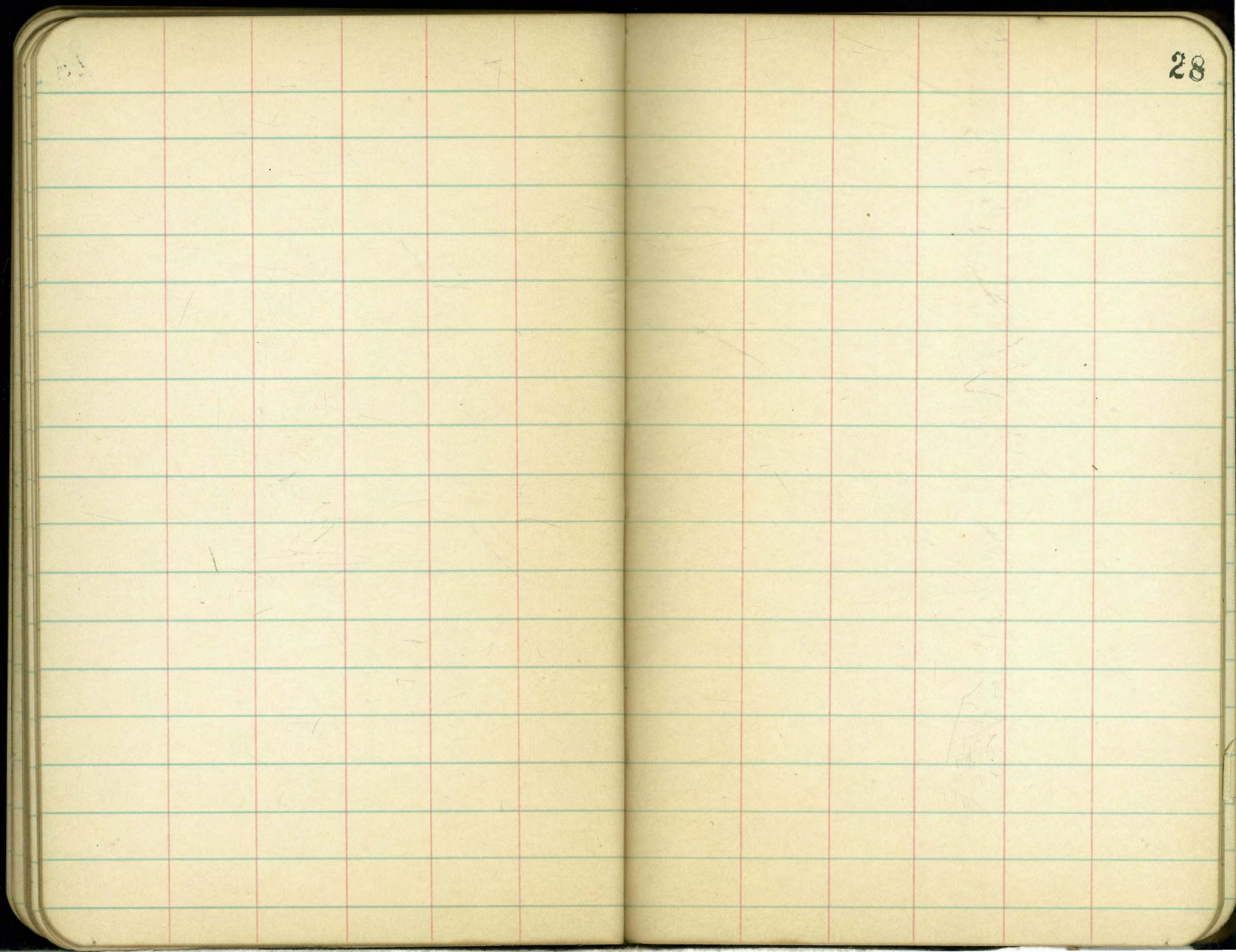
Alley +0.00

251.50

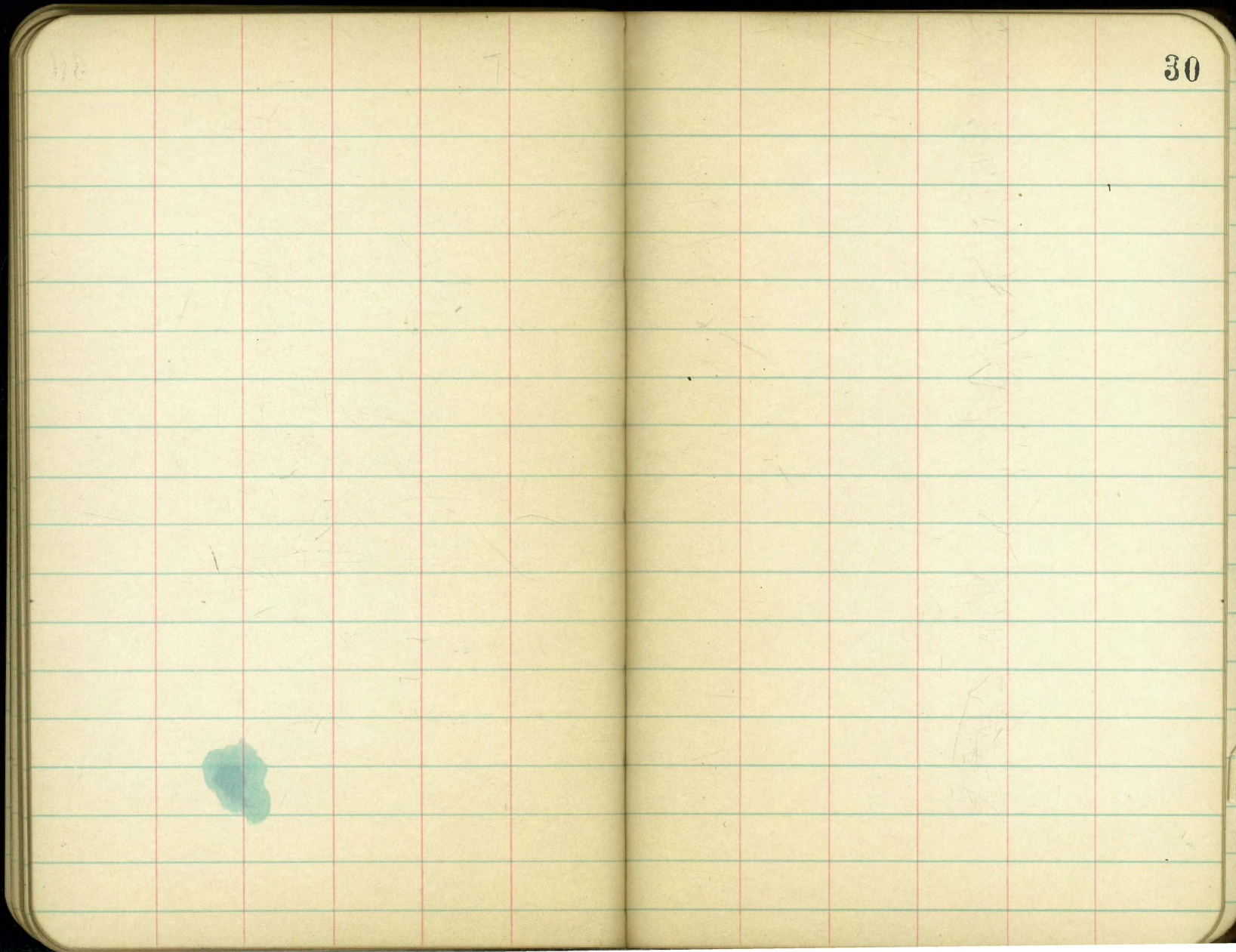
West curb

52 ft

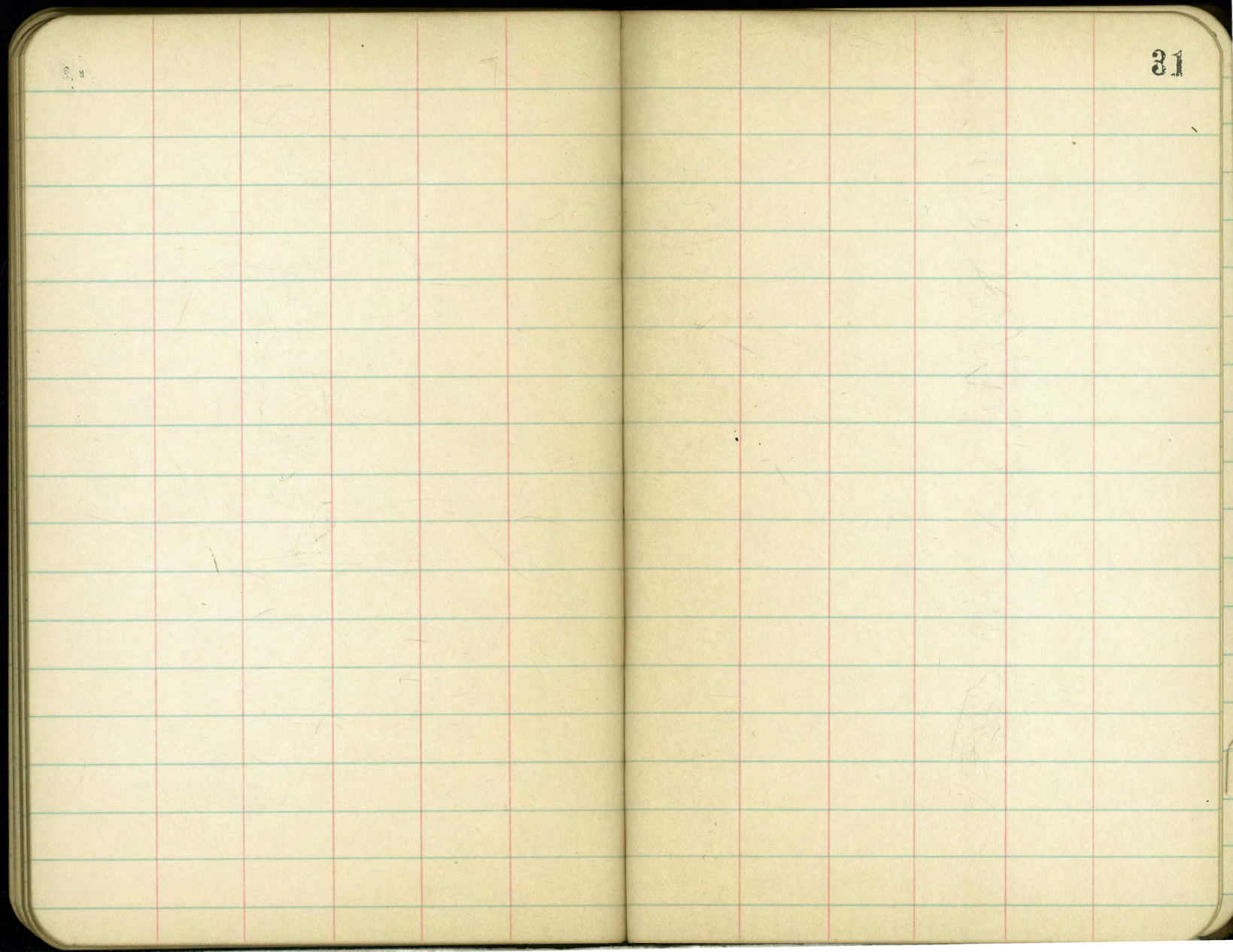




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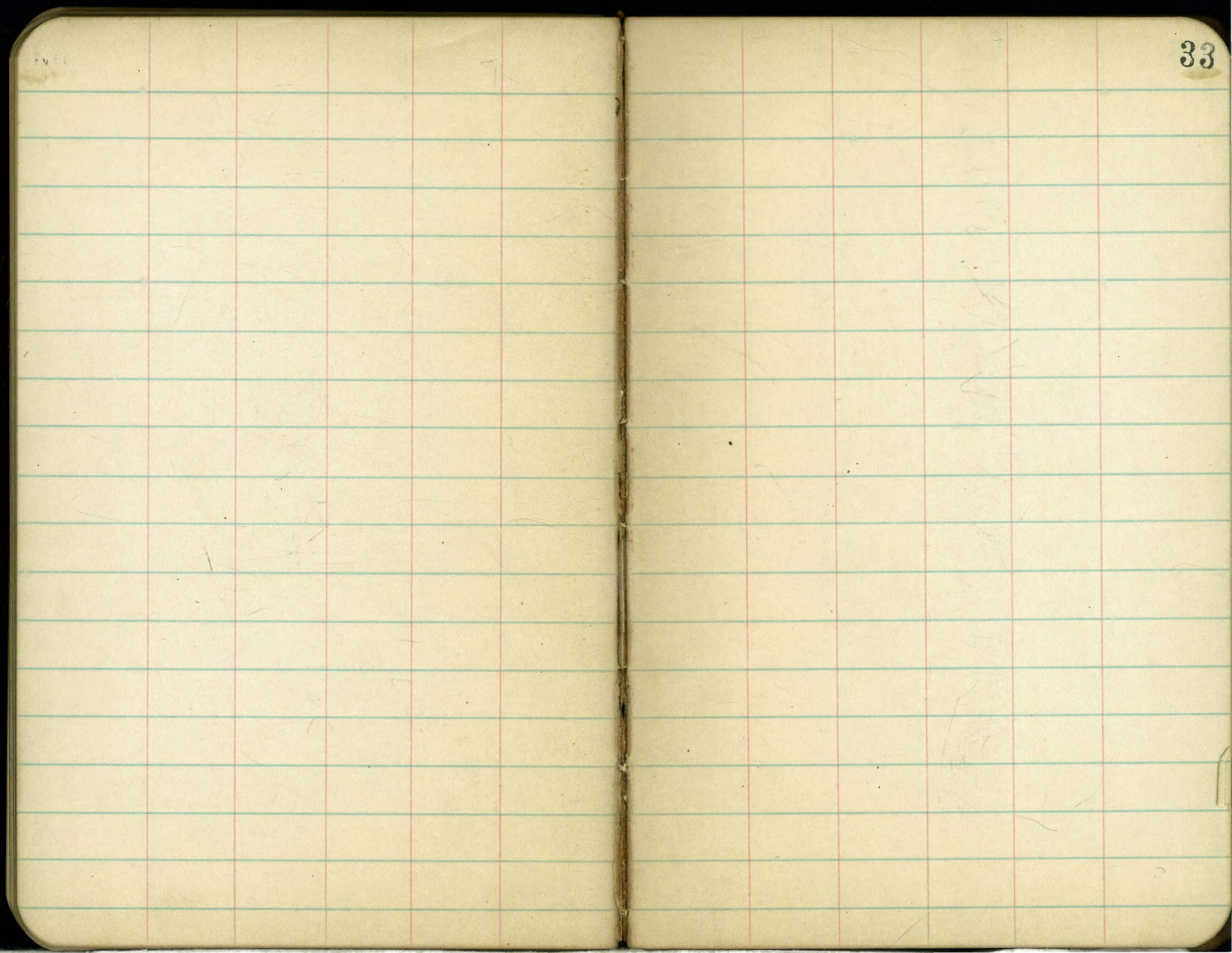
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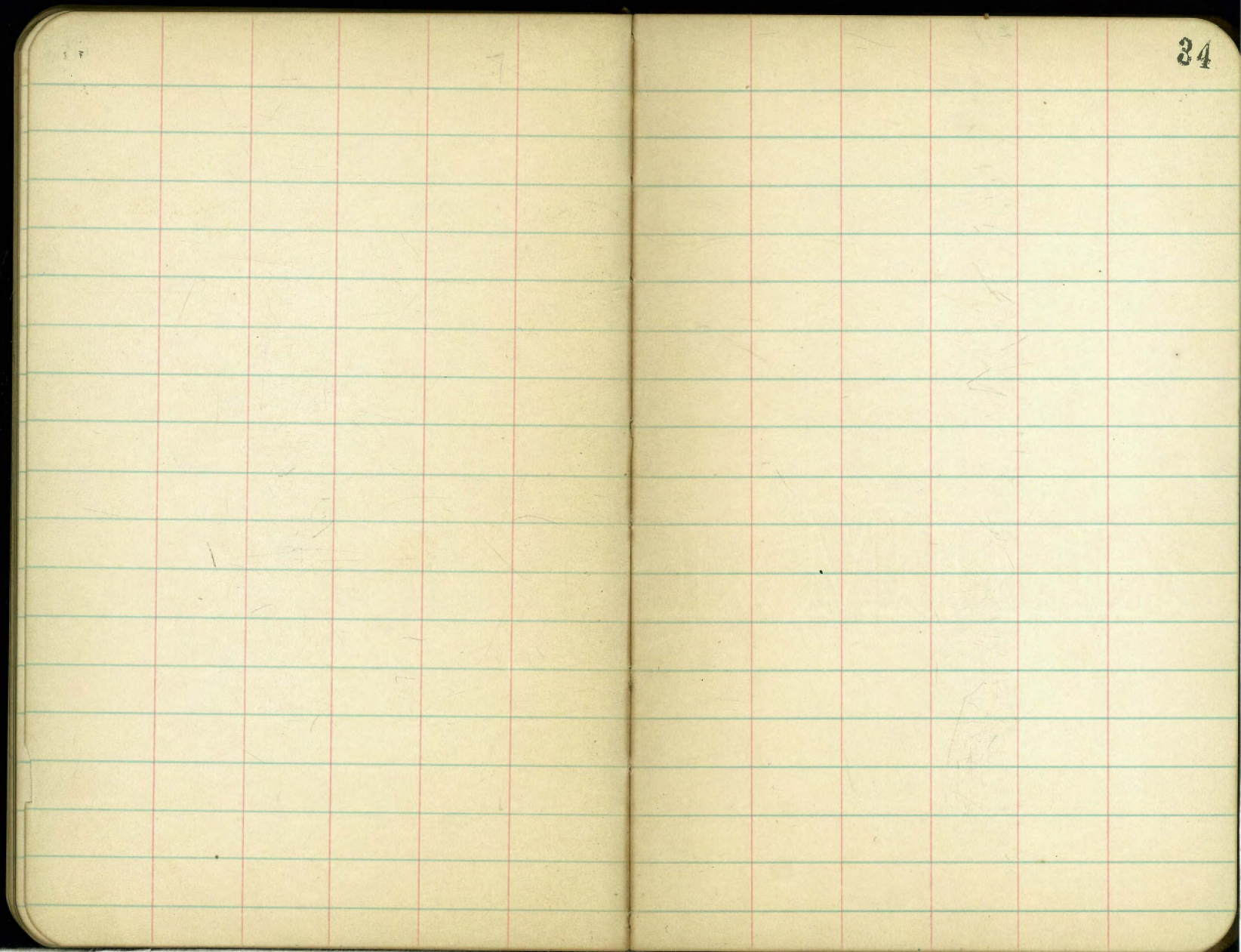
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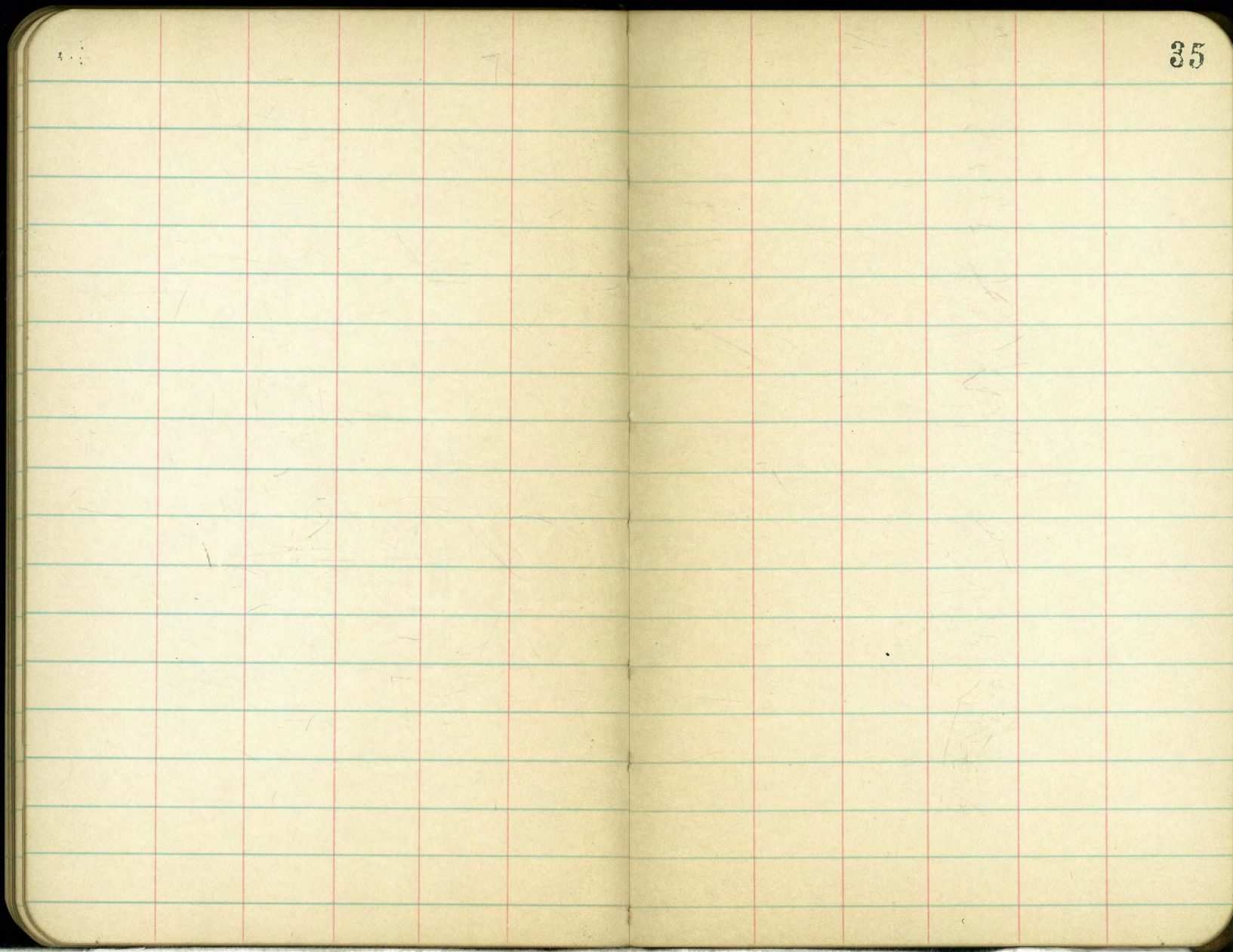
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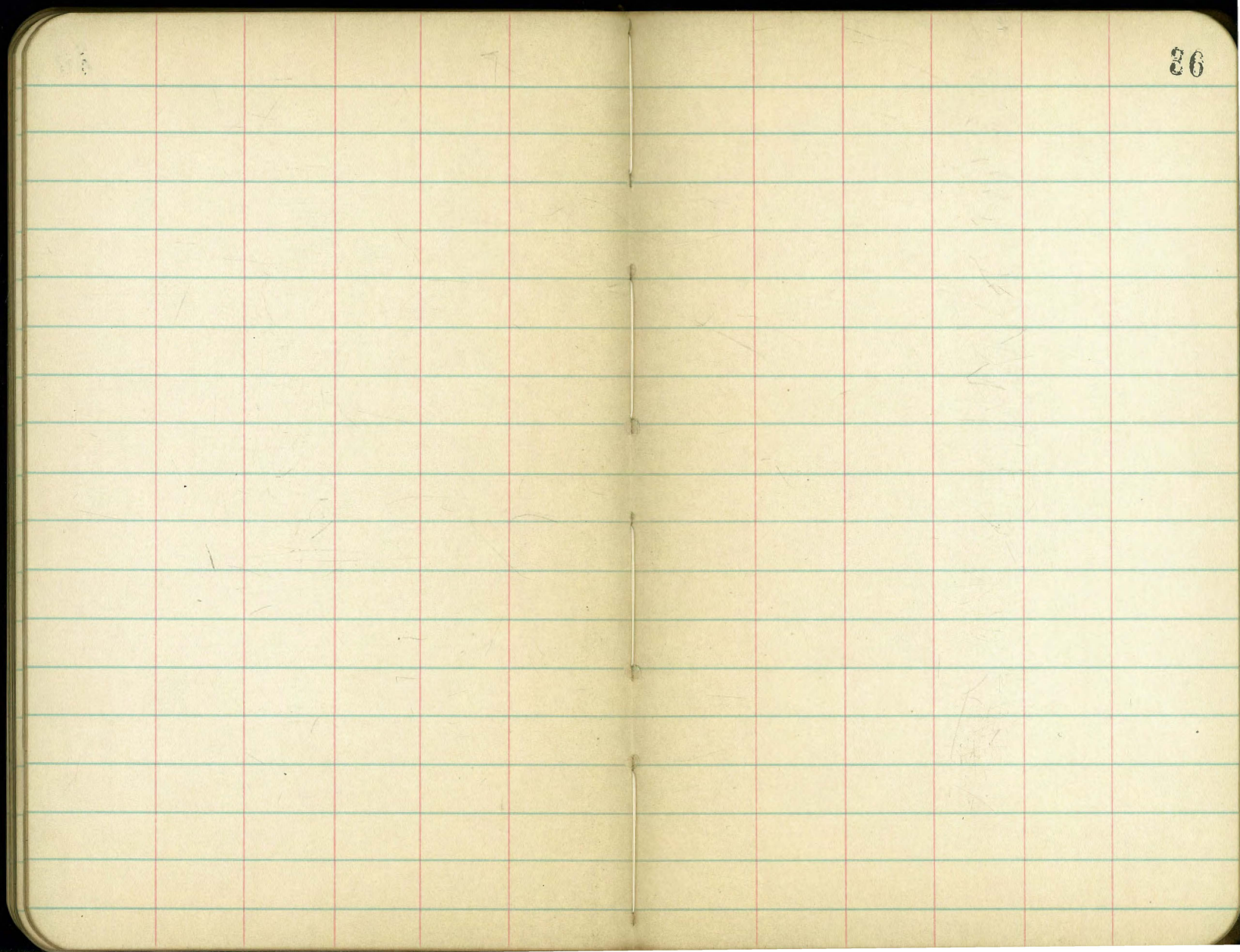


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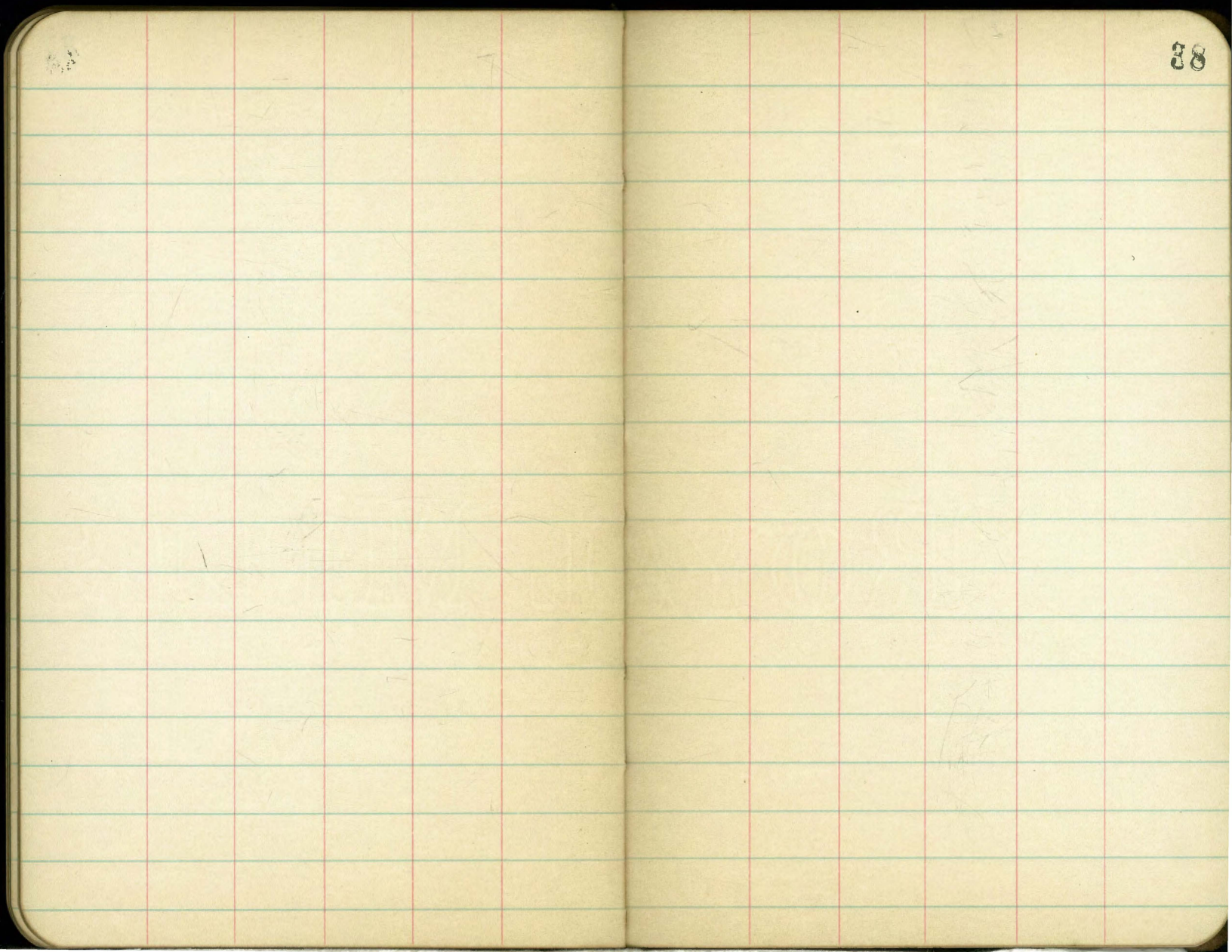




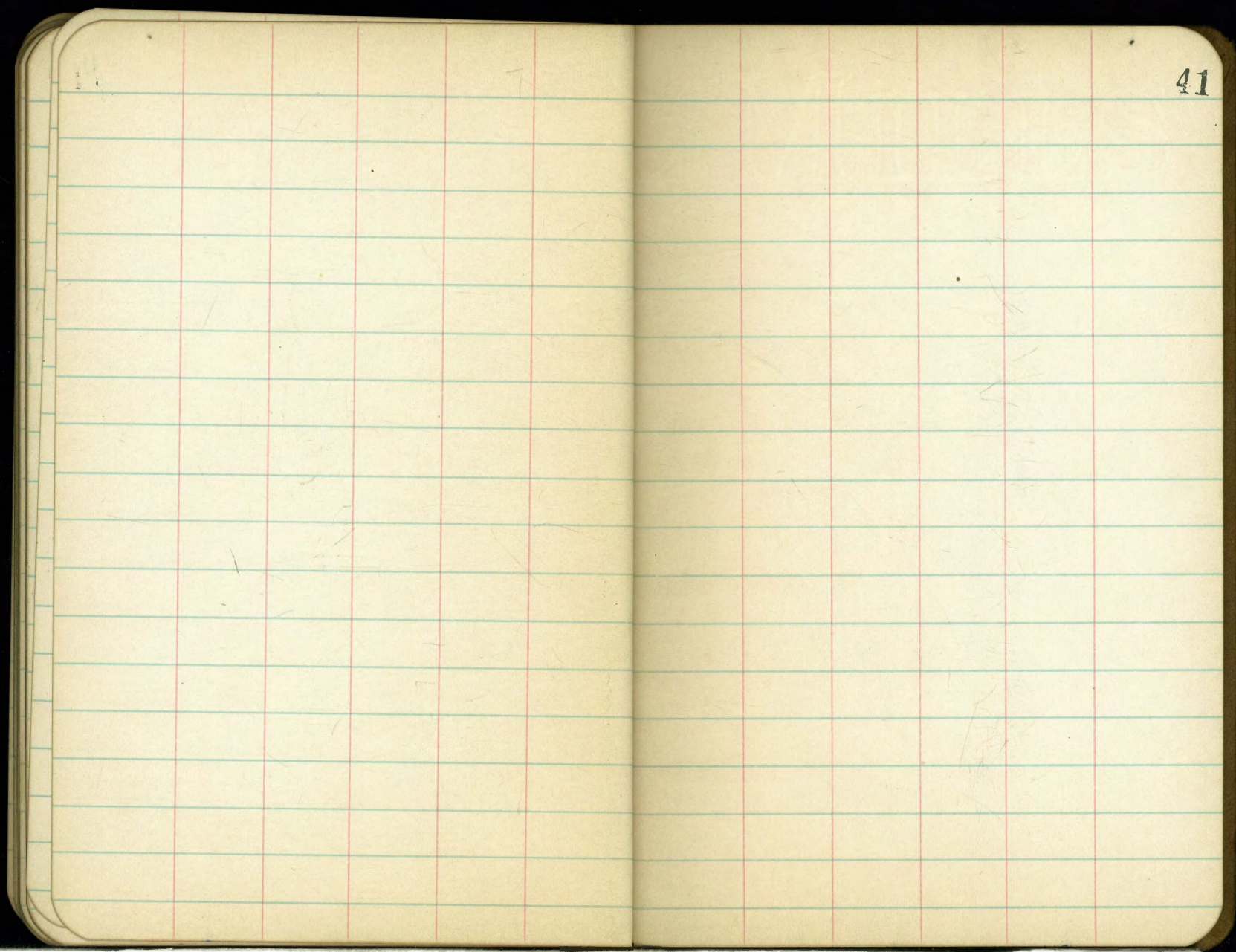
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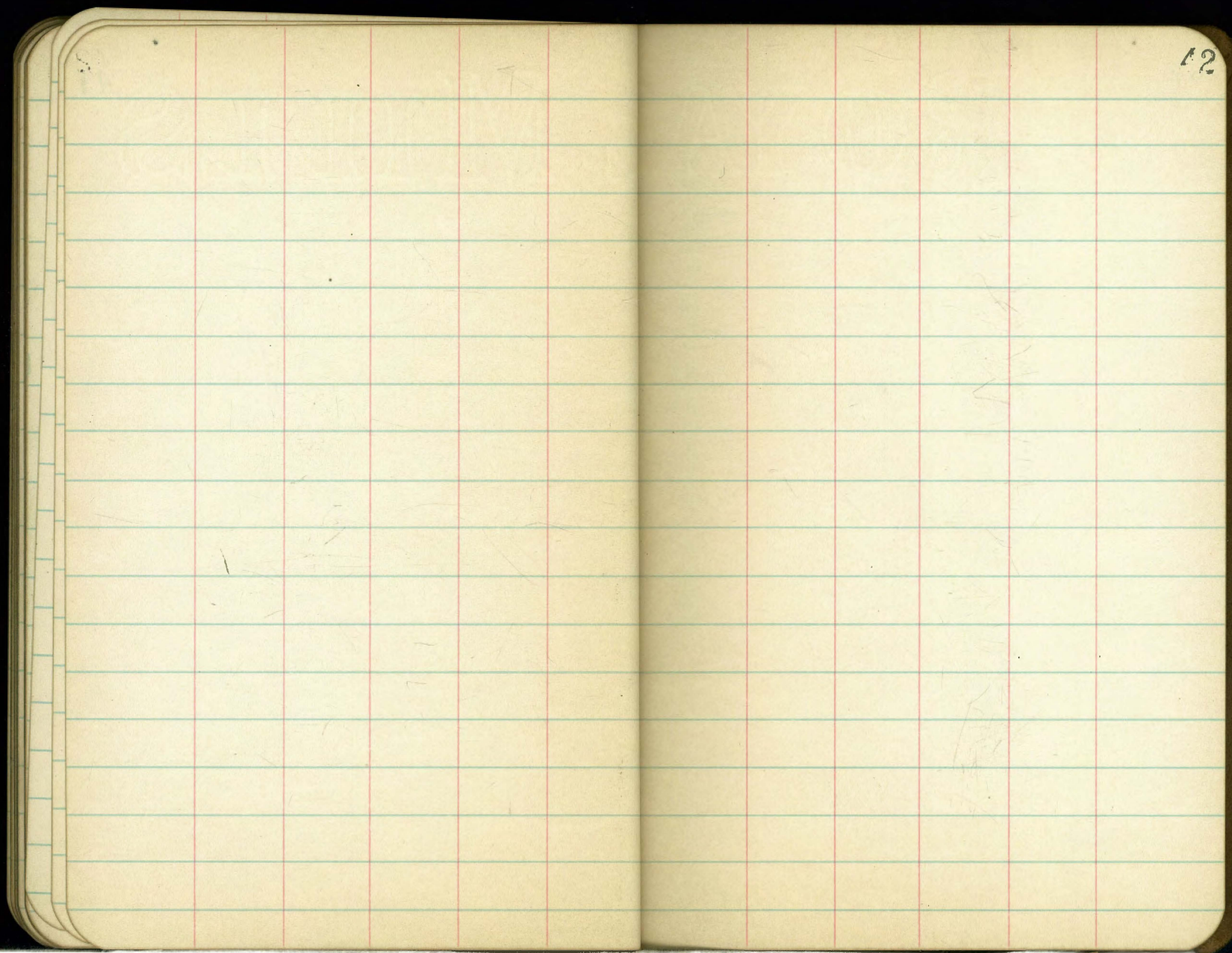
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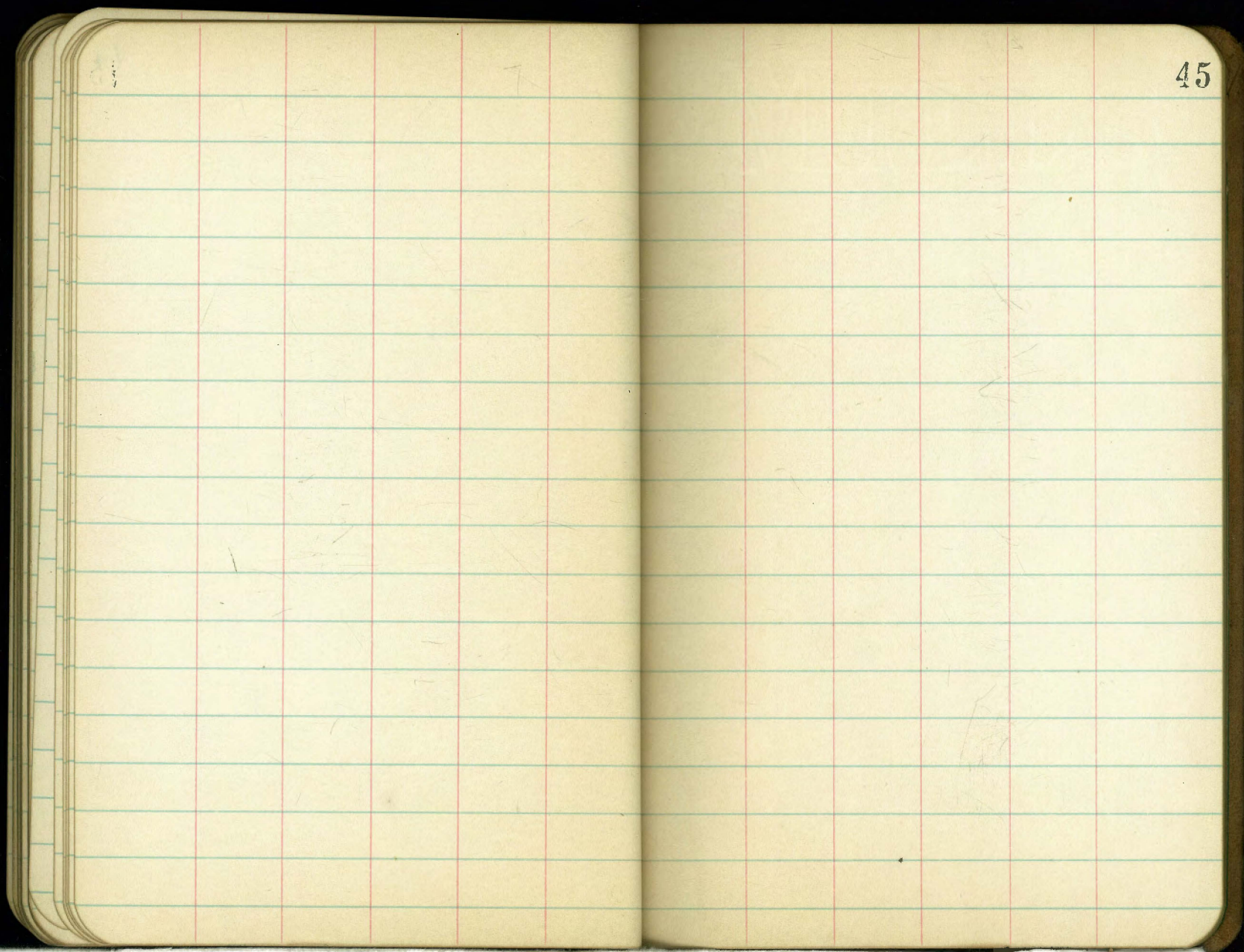


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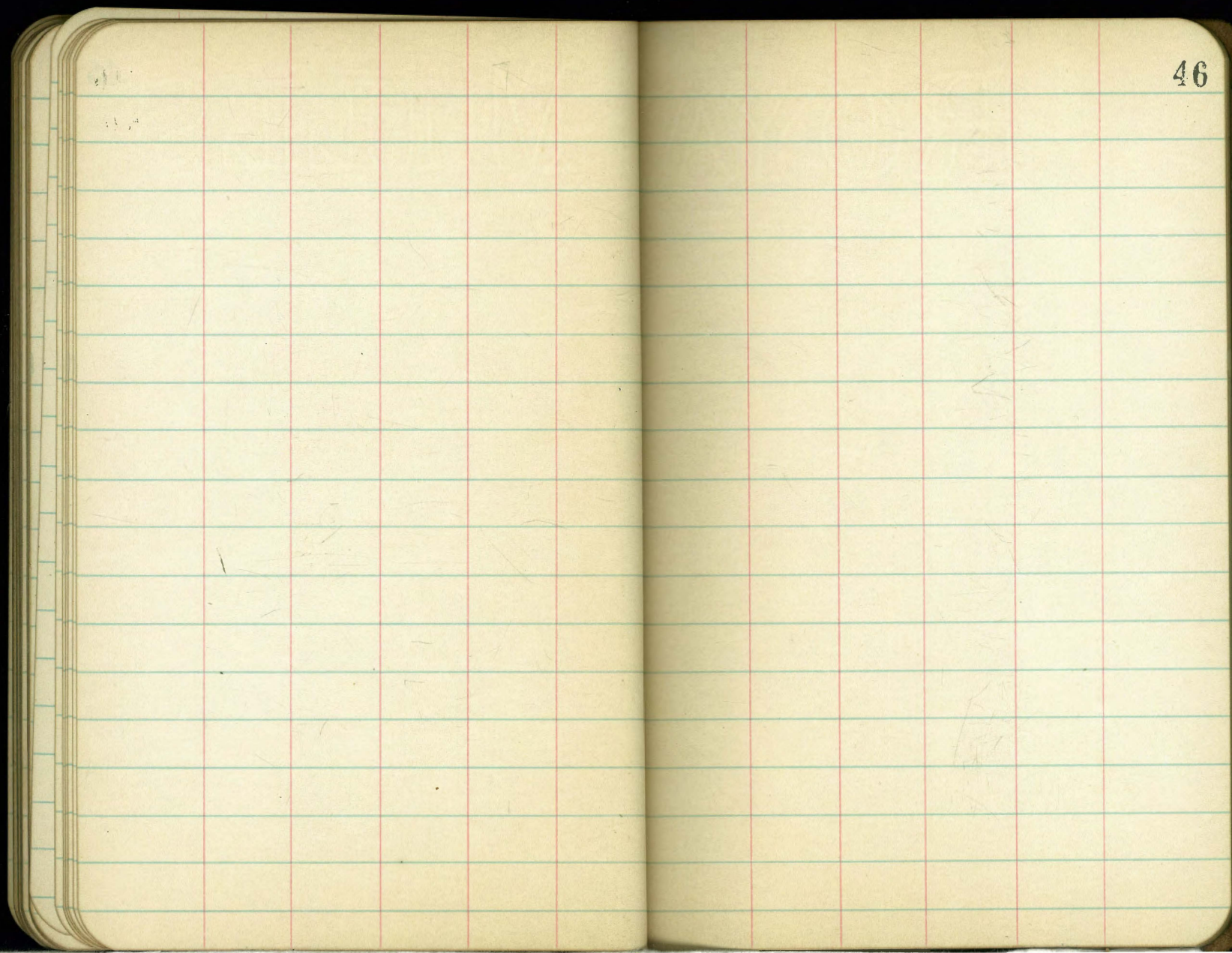


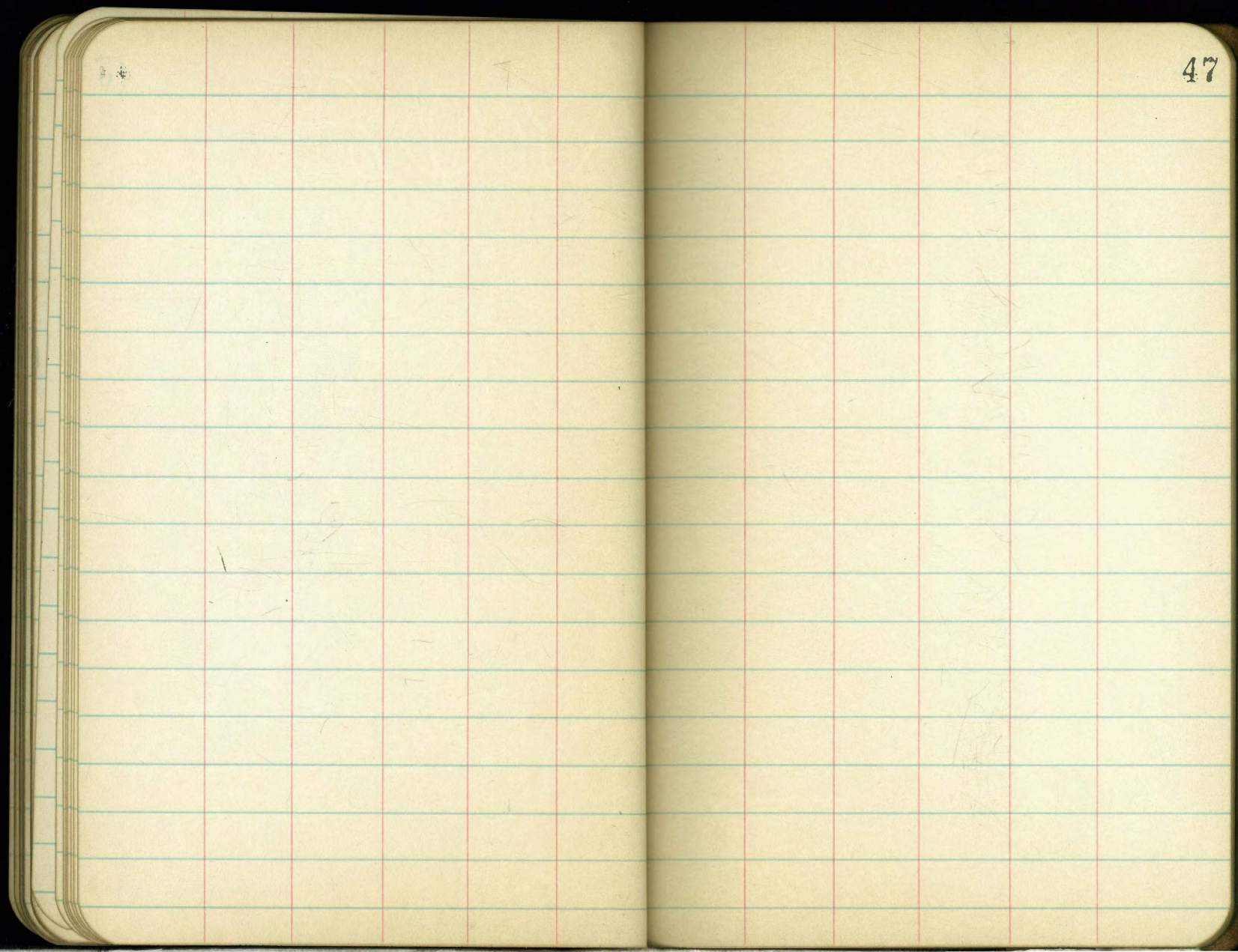
41

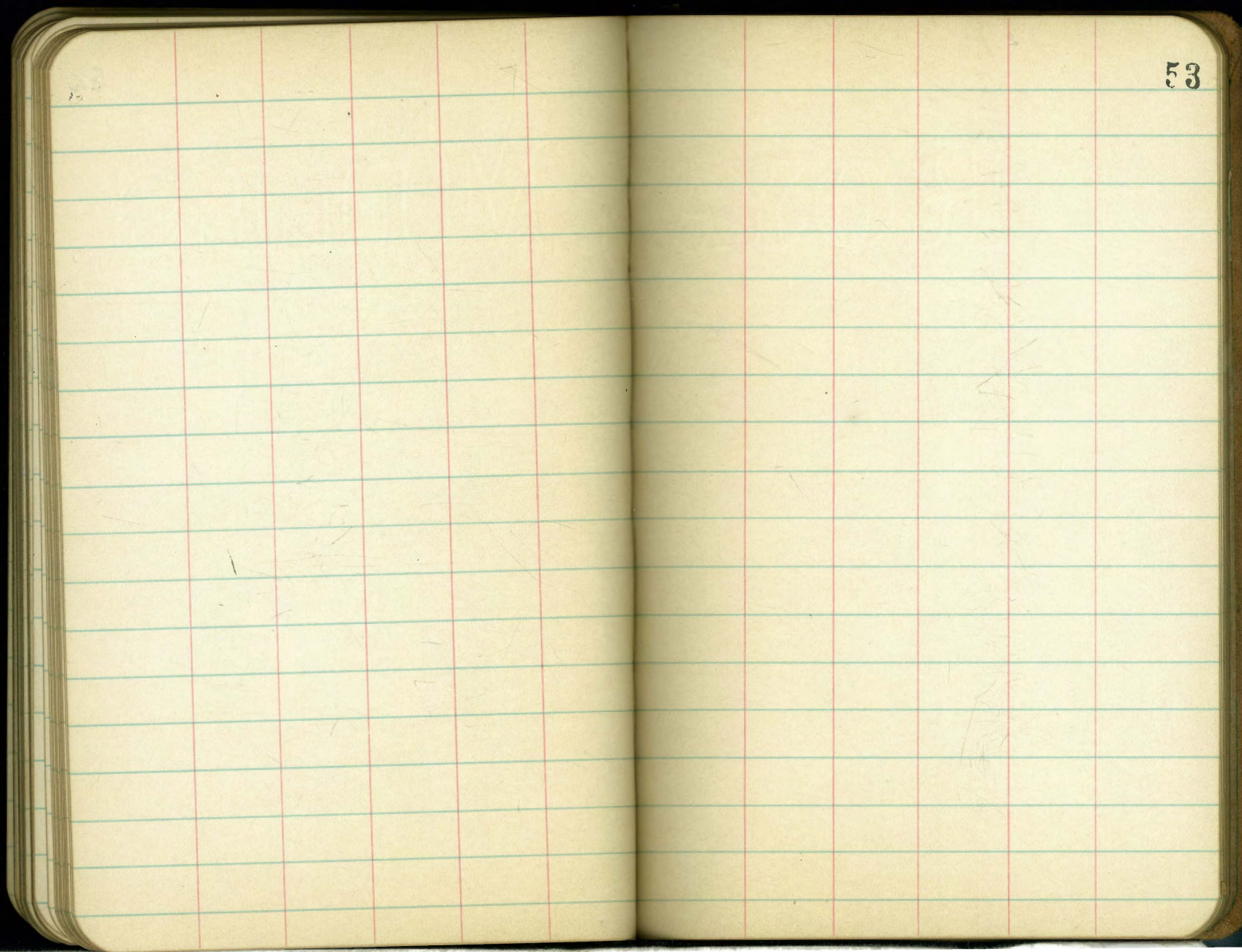


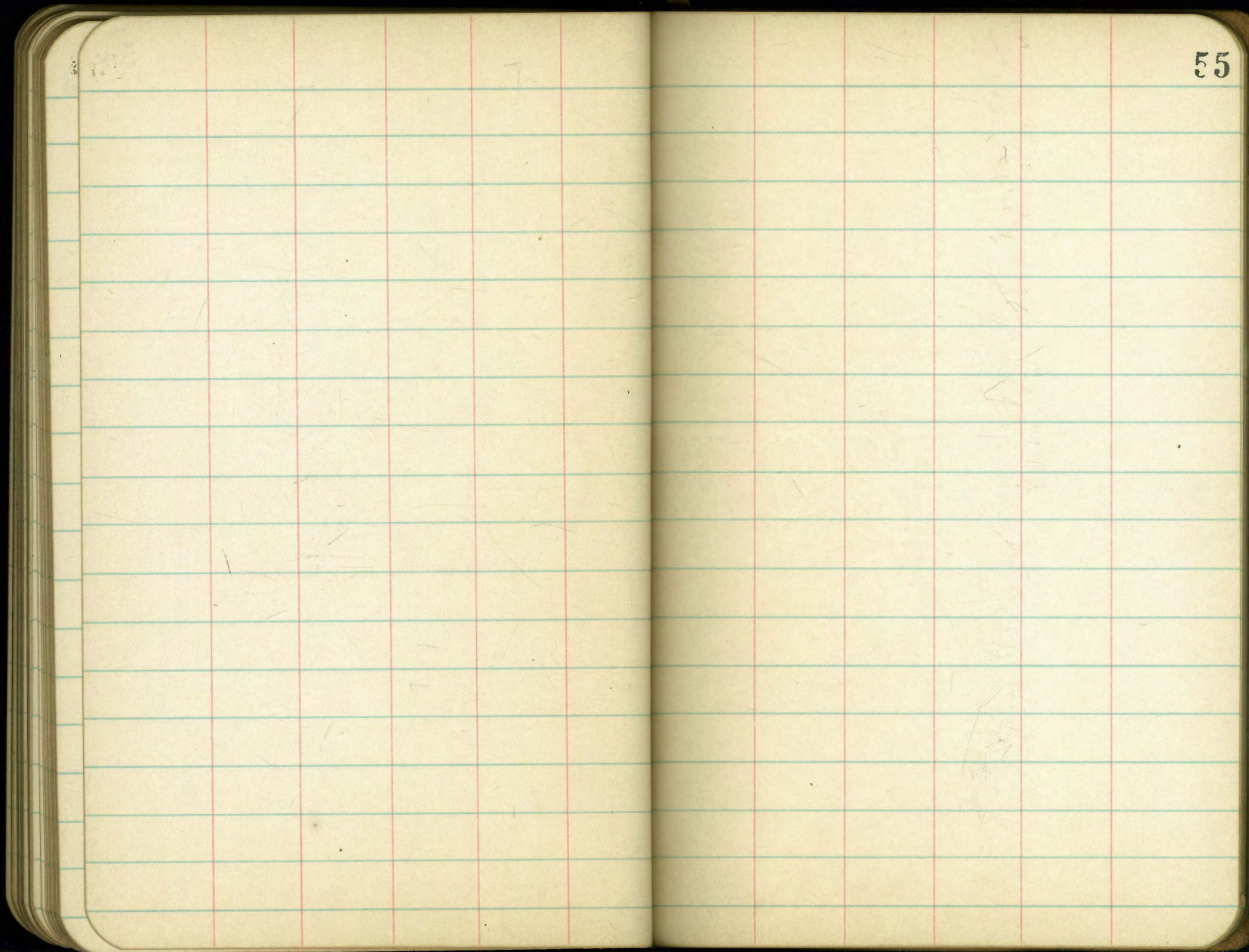


45



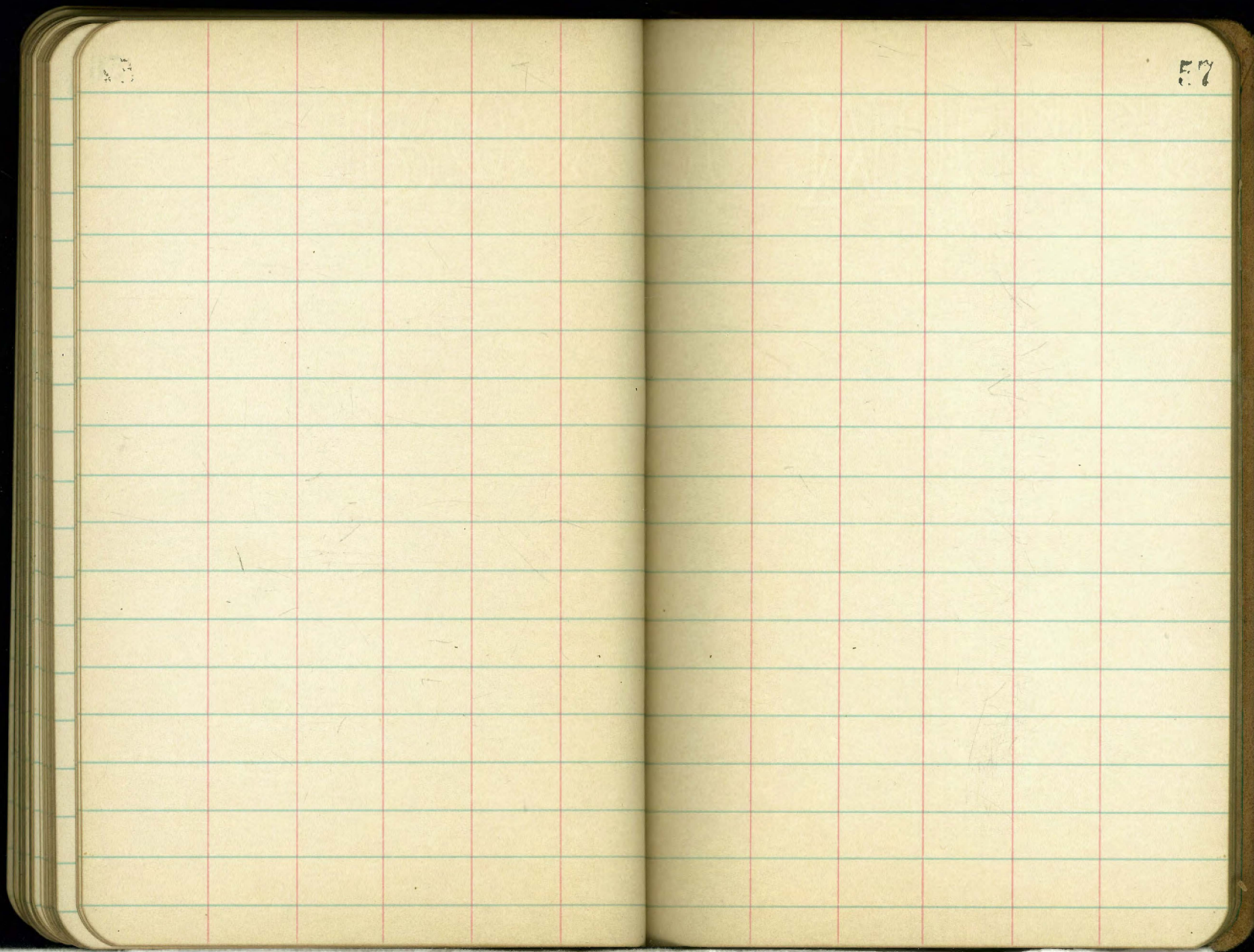






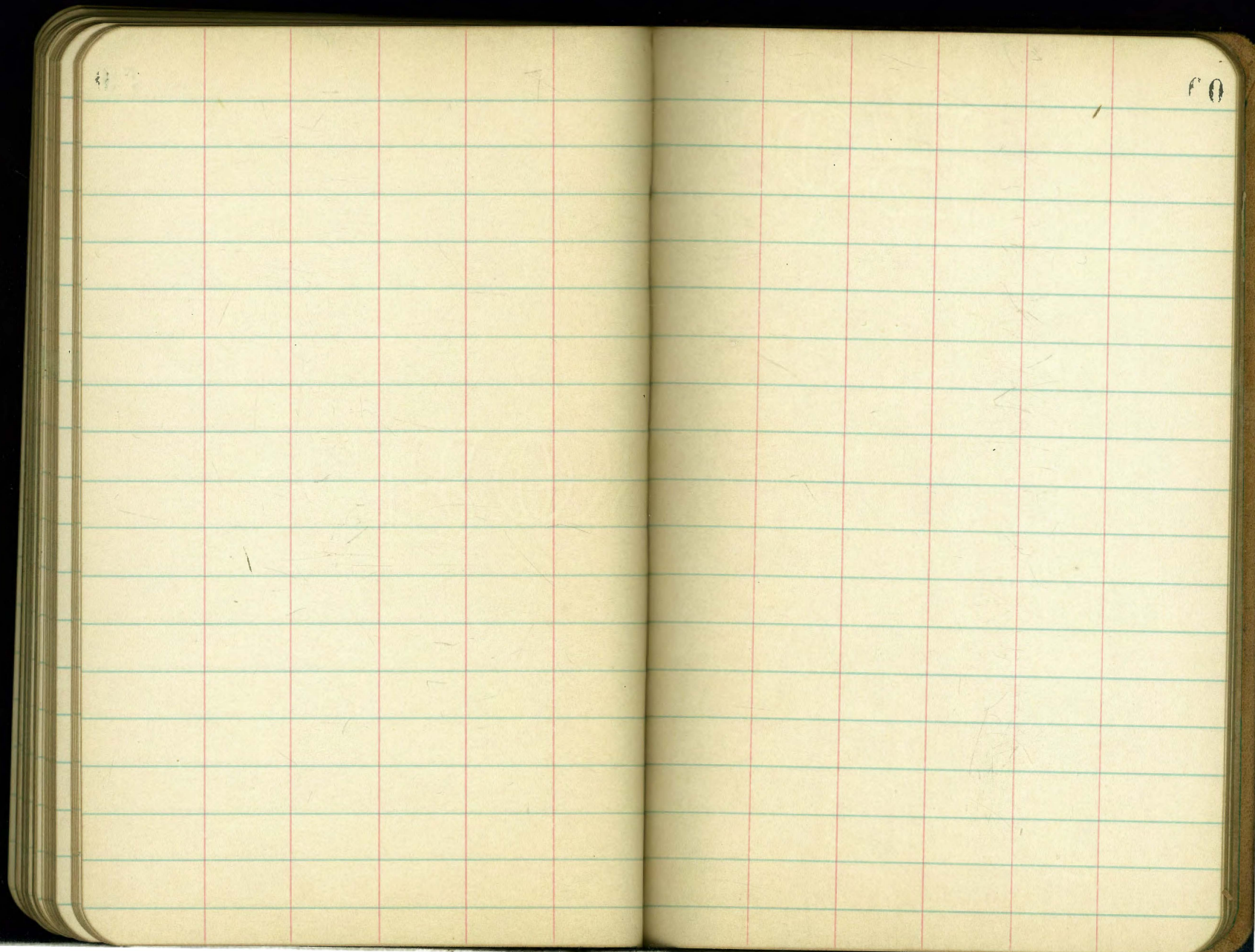
55

56



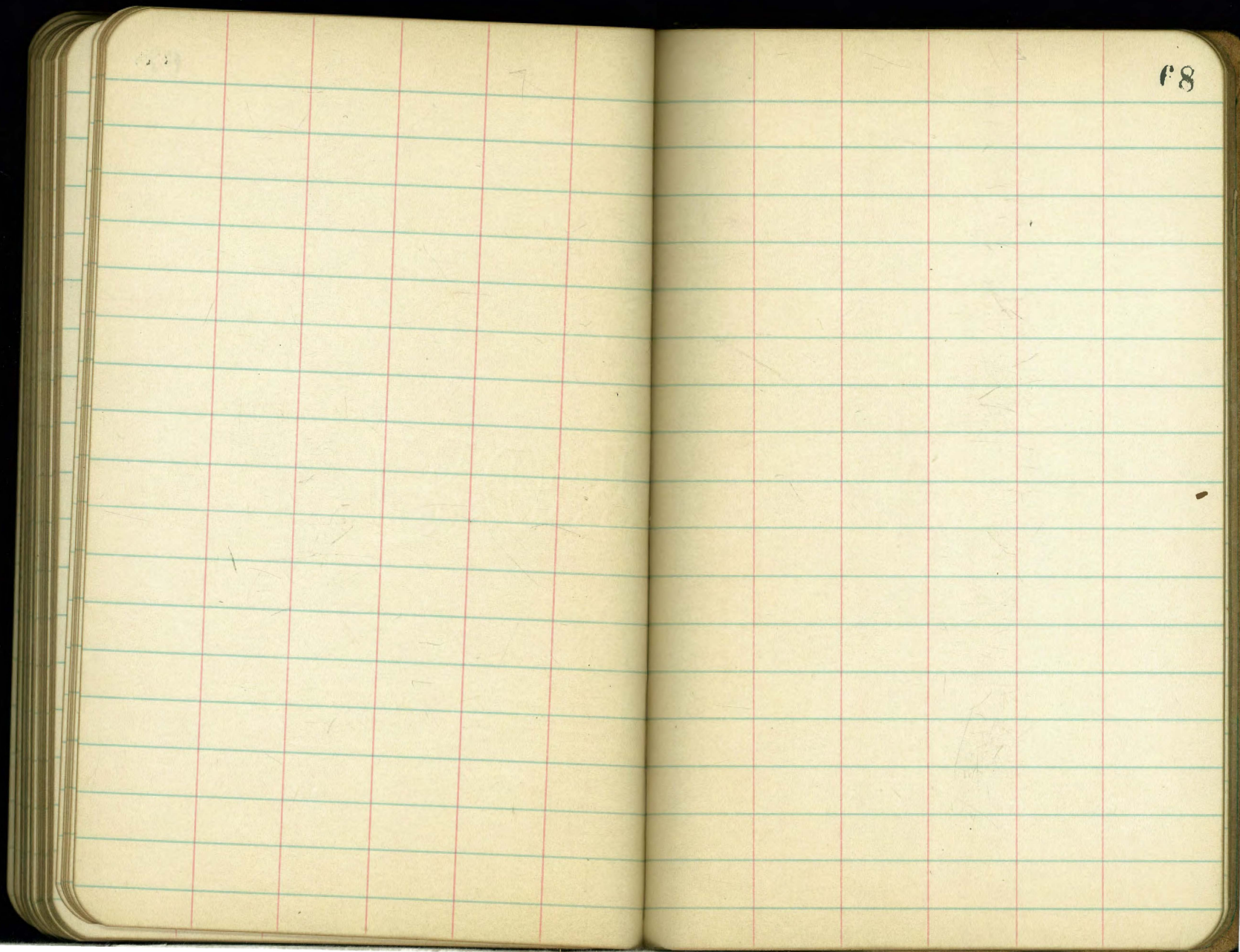
56

57

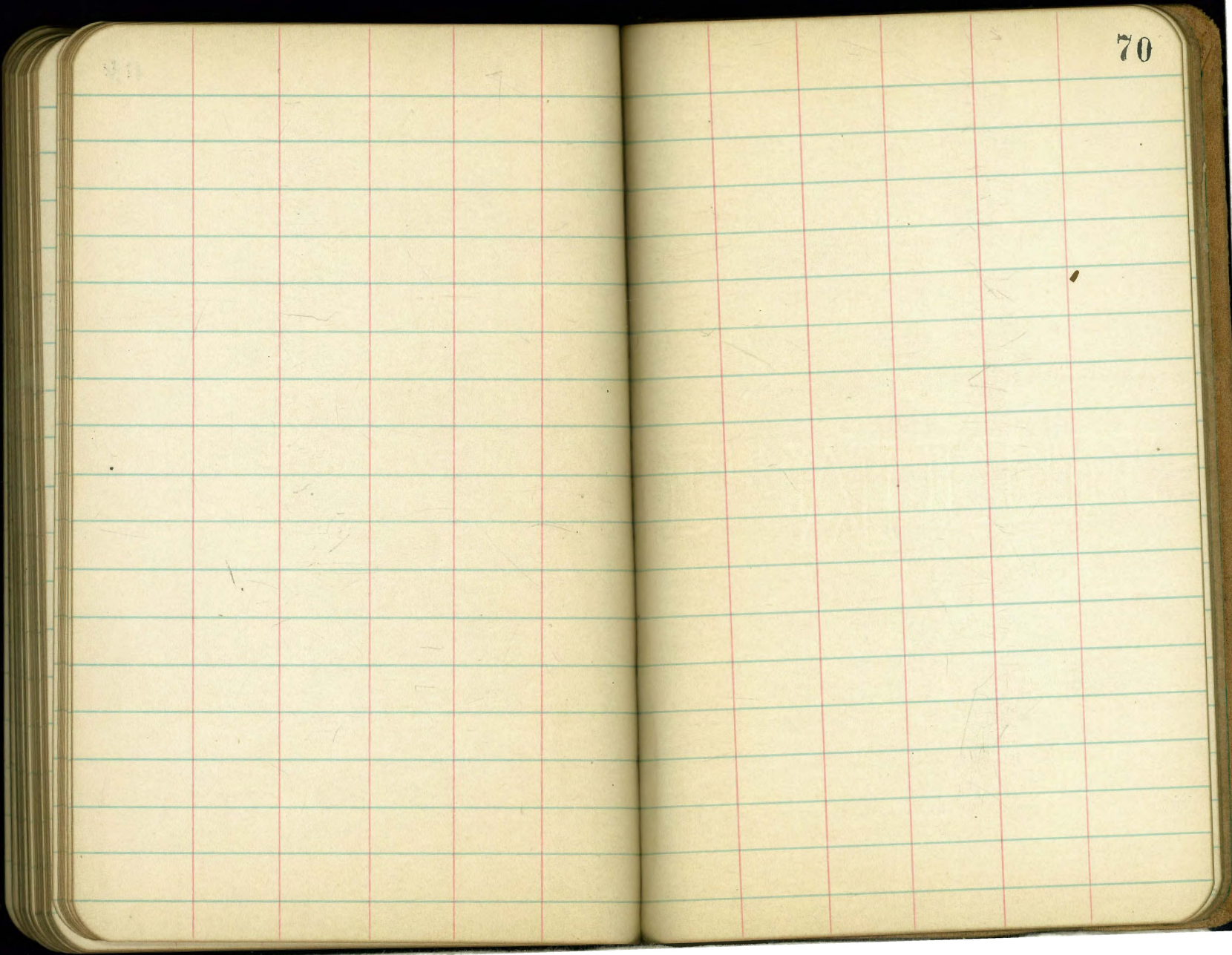


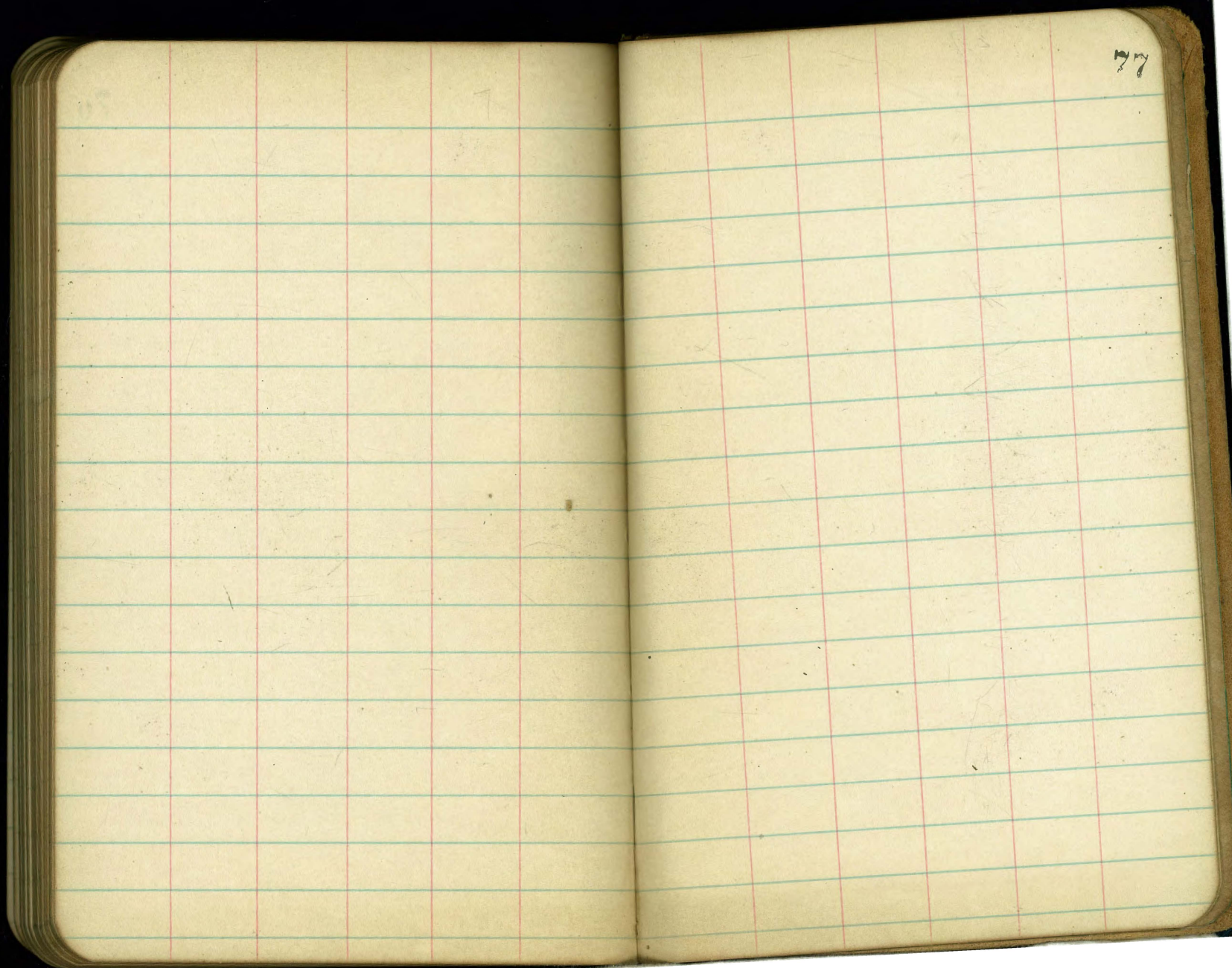
65

66



68





77

985

1125

1185

1060

1090

1110

1165

3400

301.73

~~2.11~~

304.92

304.42

~~8.50~~

300.62

slip Herbert N

304.92

~~5.20~~

395.62 slip Herbert S

304.42

~~6.20~~

298.22

298.12 N. 25' andley

304.42

~~7.50~~

296.70 bot. N. N of Herbert

304.42

~~7.7~~

296.7 N. End of 13' slip of University

304.42

~~11.10~~

393.3

297.16

~~6.86~~

290.30

304.42

~~6.86~~

297.56

~~4.70~~

302.26

~~4.20~~

395.06

297.56

~~3.70~~

301.26

~~4.20~~

297.06

297.16

~~4.20~~

292.96

~~3.36~~

301.36

2078

226.77

43.4

320.8

1.9

200 / 2.50 = 80

0.125 x 4000 = 500

750 - 500 = 250

5530.6

19.3

24.5

96.5

77.2

86.85

Published by H. S. CROCKER COMPANY, Stationers, Drawing Materials, Mathematical Instruments, etc., San Francisco.

TRAVERSE TABLE FOR TRANSIT BOOK. From 1° to 90° for a distance of 100.

Degrees.	DEGREES.		1/2 DEGREE.		1/2 DEGREE.		1/2 DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100.00	0.44	100.00	0.87	99.99	1.31	89
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	88
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	87
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	86
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	85
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	84
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	83
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	82
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	81
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	80
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	79
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	78
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	77
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	76
14	97.03	24.19	96.92	24.62	96.81	25.04	96.70	25.46	75
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	74
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	73
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	72
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	71
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	70
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	69
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	68
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	67
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	66
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	65
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	64
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	63
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	62
28	88.29	46.95	88.09	47.33	87.88	47.72	87.67	48.10	61
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	60
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	59
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	58
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	57
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	56
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	55
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	54
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	53
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	52
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	51
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	50
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	49
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	48
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	47
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	46
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	45
45	70.71	70.71							
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
Degrees.	DEGREES.		1/2 DEGREE.		1/2 DEGREE.		1/2 DEGREE.		Degrees.

57
41

103

2060
330

2378