

City Sowers
Levels.

UNION ST.
& BRANT ST.
& ALBROSS ST.

TRANSIT

F.B. 664

664

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

Minutes.	Lks.	Minutes.	Lks.	Minutes.	Lks.
1	2½	21	49	41	95½
2	4½	22	51½	42	98
3	7	23	53½	43	100½
4	9½	24	56	44	102½
5	11½	25	58½	45	105
6	14	26	60½	46	107½
7	16½	27	63	47	109½
8	18½	28	65½	48	112
9	21	29	67½	49	114½
10	23½	30	70	50	116½
11	25½	31	72½	51	119
12	28	32	74½	52	121½
13	30½	33	77	53	123½
14	32½	34	79½	54	126
15	35	35	81½	55	128½
16	37½	36	84	56	130½
17	40	37	86½	57	133
18	42	38	88½	58	135½
19	44½	39	91	59	137½
20	46½	40	93½	60	140

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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.
°		°		°		°	
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

H.C.L. }
 F. Miller. } July 23/1887

	+	H.I.	—	Elev	B.B.	REMARKS.
B.M.	9.61	21.90		12.29		
0+50			11.11	10.79		H & UNION ST'S.
1			10.83	11.07		
1+50			9.64	12.26		
2			8.82	13.08		
2+50			8.39	13.51		
3			6.70	15.20		
3+50			6.87	15.03		
4			5.53	16.37		
4+50			5.29	16.61		G & UNION ST'S.
5			4.77	17.13		
5+50			4.03	17.87		
6			3.33	18.57		
6+50			2.88	19.02		
7			2.20	19.70		
7+50			1.43	20.47		
B.M.			0.26	21.64	21.64	
I.P.	6.51	28.15				
8			7.62	20.53		
8+50			6.70	21.45		I & UNION ST'S.
9			6.18	22.03		

H.C.I. }
 F. Miller. } July 23, 1887

2

Δ	+	H.I.	—	Elev	B.B.	REMARKS.
9+50		28.15	5.46	22.69		
10			5.19	22.96		
10+50			5.04	23.11		
11			4.55	23.60		
11+50			3.98	24.17		
12			3.89	24.26		
B.M.			3.24	24.91	24.91	
I.P.	6.05	30.96				15 & UNION ST'S.
12+50			5.95	25.01		
13			5.72	25.54		
13+50			5.58	25.38		
14			5.70	25.26		
14+50			5.45	25.51		
15			4.50	26.46		
15+50			4.75	26.21		
16			3.60	27.36		
16+50			2.58	28.38		
B.M.			1.03	29.93	29.93	
I.P.	1.84	31.77				10 & UNION ST'S
17			2.45	29.32		
17+50			3.03	28.74		

H.C.L. }
 F. Miller. } July 23/1887.

Δ	+	H.I.	—	Elev.	B.B.	REMARKS.
18		31.77	4.22	27.55		
18+50			4.07	27.70		
19			3.95	27.82		
B.M.			2.33	29.44	29.44	
I.P.	6.04	35.48				
19+50			7.83	27.65		
20			7.13	28.35		
20+50			7.45	28.53		
21			6.74	28.74		
21+50			6.77	29.01		
22			4.56	30.92		
22+50			1.13	27.35		
I.P.	11.30	45.65				
23			8.48	37.17		
23+50			7.87	37.78		
B.M.			5.27	40.38	40.38	
24			6.57	39.08		
24+50			5.31	40.34		
25			5.07	40.64		
25+50			4.64	41.07		
26			4.86	40.79		

C & UNION ST'S.

B & UNION ST'S.

H.C.L. }
 E. Miller } July 23, 1887.

Δ	+	H.I.	—	Elev	B.B.	REMARKS.
26+50		4565	4.41	4124		A & UNION ST'S
27			4.33	4132		
27+50			3.80	4185		
B.M.			2.59	4306	4306	
T.P.	7.33	5039				
28			7.35	4304		
28+50			6.43	4396		
29			5.18	4521		
29+50			4.58	4581		
30			6.28	4411		
30+50			9.95	4044		ASH & UNION ST'S
T.P.	11.42	5186				
40			10.50	4136		
1			7.97	4389		
1+50			11.72	4014		
2			9.88	4188		
2+50			5.32	4654		
3			3.55	4831		
3+50			1.07	5085		
B.M.			3.53	4833	4833	
T.P.	10.04	6089				Metal Bench.

H.C.I. }
 F. Miller. } July 25, 1887

Δ	+	H.I.	—	Elev	B.B.	REMARKS.
4		60.89	8.27	52.62		Beech & Union St's.
4+40			6.37	54.52		
BM			6.88	54.01	54.07	
4+60			7.59	53.30		
5			14.50	46.39		
5+50			12.60	48.29		
6			11.60	49.29		
6+50			9.33	51.56		
7			0.54	60.35		
I.P.	8.28	68.63				
7+50			6.08	62.55		
8			4.70	63.93		
8+50			3.78	64.85		
BM			10.17	58.46	58.46	Cedar & Union St's. State & Cedar.
I.P.	11.21	69.67				
9			3.48	66.19		
9+50			2.68	66.99		
10			2.22	67.45		
10+50			1.58	68.09		
11			1.22	68.45		
I.P.	9.01	77.46				

H.C.I. } July 25, 1887
 H. Miller.

Δ	+	H.I.	-	Elev BB.	REMARKS.
11+50		7746	7.62	6984	
B.M.			2.56	7490	74.91
12			6.47	7099	
12+50			6.64	6982	
13			5.56	7190	
13+50			4.03	7343	
14			4.06	7340	
14+50			2.16	7530	
15			3.83	7363	
15+50			2.13	7533	
T.P.	6.05	81.38			
B.M.			9.29	72.09	72.09
16			3.51	7787	
16+50			2.31	7907	
17			2.55	7883	
17+50			11.42	6996	
T.P.			0.72	8126	
T.P.	11.65	92.91			
18			7.11	8580	
18+50			3.35	8956	
19			0.75	9216	

Date & UNION ST.

THE UNION ST.

H.C.L. }
 F. Miller. } July 25, 1887

Δ	+	H.L.	—	Filer B.B.	REMARKS.	
I.P.	558	97.74				
19+50			3.74	94.00	H ²⁰ & UNION STS.	
20			5.25	92.49		
20+50			5.69	92.05		
21			4.47	93.27		
21+50			4.71	93.03		
22			5.17	92.57		
22+50			5.42	92.32		
23			4.66	93.08		
23+50			4.32	95.42		
24			4.46	93.28		
24+50			1.67	96.07	Crape & UNION STS.	
25			0.84	96.90		
I.P.	11.94	108.84				
25+25			10.98	97.86		Junction of Union & Grant Sts. <i>Unionly</i> <i>Grant St</i> 25+25
10			8.20	100.64		
9+50			9.80	99.04		
9			7.99	100.85		
8+50			5.16	103.68		
B.N.			0.47	108.37	108.37	
T.P.	240	106.08			Hawthorne & UNION STS.	

H.C.T. }
 E. Miller. } July 25, 1887

Δ	+	H.I.	-	Elev	B.B.
8		106.08	3.84	102.24	
7+50			4.06	102.02	
7			5.36	100.72	
6+50			6.81	99.27	
6			5.47	100.61	
5+50			3.44	102.64	
5			4.55	101.63	
4+50			5.63	100.45	
4			7.67	98.41	
3+80			7.70	98.38	
3+50			14.60	91.48	
3+25			17.00	89.08	
3			13.60	93.48	
2+50			7.93	98.15	
2			6.56	99.52	
1+50			6.38	99.70	
1			8.40	97.68	
I.F.	9.53	107.21	1.73	<u>105.48</u>	<u>106.50</u>

REMARKS.

IVY & UNION STS.

JUNIFER &
 UNION STS.

H.C.L. }
 F. Miller } July 26, 1884

Brant St.

9

Δ	+	H.I.	-	Elev.	B.B.
BM	049	108.83		108.34	
	25+25		10.97	97.86	
	25+50		9.20	99.63	
	26		6.80	102.03	
	26+50		7.36	101.47	
	27		5.37	103.46	
	27+50		0.67	108.16	
	BM		049	108.34	108.34
	T.P.	1085	119.19		
	28		8.70	110.49	
	28+50		7.62	111.57	
	29		8.22	110.97	
	29+50		6.43	112.76	
	30		1.45	117.74	
	T.P.	1166	129.40		
	30+50		6.95	122.45	
	31		4.39	125.01	
	31+50		1.85	127.55	
	T.P.	385	131.40		
	32		1.13	130.27	
	32+50		1.22	130.18	

Hawthorne & Brant.

Ivy & Brant.

H.C.L. }
 F. Miller. } July 26, 1887

Brant St. 10

Δ	+	H.I.	-	Filed BB.
33+70		131.40	23.00	108.40
34			13.60	117.80
34+50			0.20	131.20
T.P.	10.40	141.60		
34+78			7.55	134.05
B.M.			2.18	<u>139.42</u> <u>139.42</u>

REMARKS.

JUNIPER & BRANT
 STS.

H.C.L.
F. Miller. } August 6/87

Δ	+	HI.	—	Elev	B.B.
B.M.	3.17	9186		8869	8869
40 Δ 15 on Union.		} between posts of elm.	18.46	73.40	
3+50			15.20	76.66	
3			12.50	79.36	
2+50			10.47	81.39	
2			10.00	8186	
1+50			13.40	7846	
1			14.40	7746	
0+50			0.43	91.43	
I.P.	10.30	10773			
0			6.17	85.69	
B.M.			5.85	9588	9588
I.P.	8.66	10454			
1			6.51	9803	
1+50			6.87	9847	
2			4.60	9994	
2+50			3.94	10060	
3			2.17	102.37	
I.P.			0.41	104.13	
I.P.	12.07	116.20			
3+50			10.43	105.77	

ALBATROSS ST. 11

REMARKS.

TRAIL & ALBATROSS ST.

Plans show sewer connected at
Elm & Albatross St.
as no plugs appeared to be driven into the
ground anywhere — so we run a
temporary line by eye sight & step measure

TRAIL & ALBATROSS ST.

H.C.L. } August 6, 1887
 F. Miller }

ALBATROSS - 12

Δ	+	HI	—	Elev.	BB.
4		116.20	10.43	107.62	
B.M.			10.54	105.66	105.66
4+50			9.95	106.25	
5			9.05	107.15	
5+50			4.90	111.30	
T.P.			5.77	116.03	
T.P.	11.71	127.74			
6			9.17	118.57	
6+50			3.86	123.88	
7			0.21	127.53	
T.P.	11.54	139.07			
7+50			9.16	129.91	
8			5.62	133.45	
8+25			4.44	134.63	
B.M.			5.74	133.93	133.93
T.P.	12.00	145.93			
8+50			9.66	136.27	
9			6.17	139.76	
7+50			2.90	143.03	
10			1.71	144.22	
T.P.	11.55	153.77			

REMARKS.

CRAPED ALBATROSS - STS

THE HAWTHORN & ALBATROSS STS.

H.C.L. } August 6, 1887
 H. Miller }

Δ	+	HI	-	Elev B.B.
10+50		155.77	8.26	147.51
11			9.70	146.07
11+50			8.54	147.18
T.P.			0.09	155.68
B.M.	<hr/>			
T.P.	11.86	167.54		
12			11.60	155.94
12+50			4.83	162.71
13			0.48	167.06
T.P.	5.33	172.39		
13+50			3.76	168.63
13+60			4.56	167.83
T.P.			11.66	160.73
T.P.	1.01	161.74		
T.P.			10.94	150.80
T.P.	3.76	154.56		
14			11.40	143.16
14+10			17.00	137.56
T.P.			0.02	154.54
T.P.	11.55	166.09		
14+50			9.67	156.42

ALBATROSS - 5th

REMARKS.

IVY & ALBATROSS - 5th

tot
 (bottom of Rivier.)

H.C.L.
F. Miller

} August 6, 1887

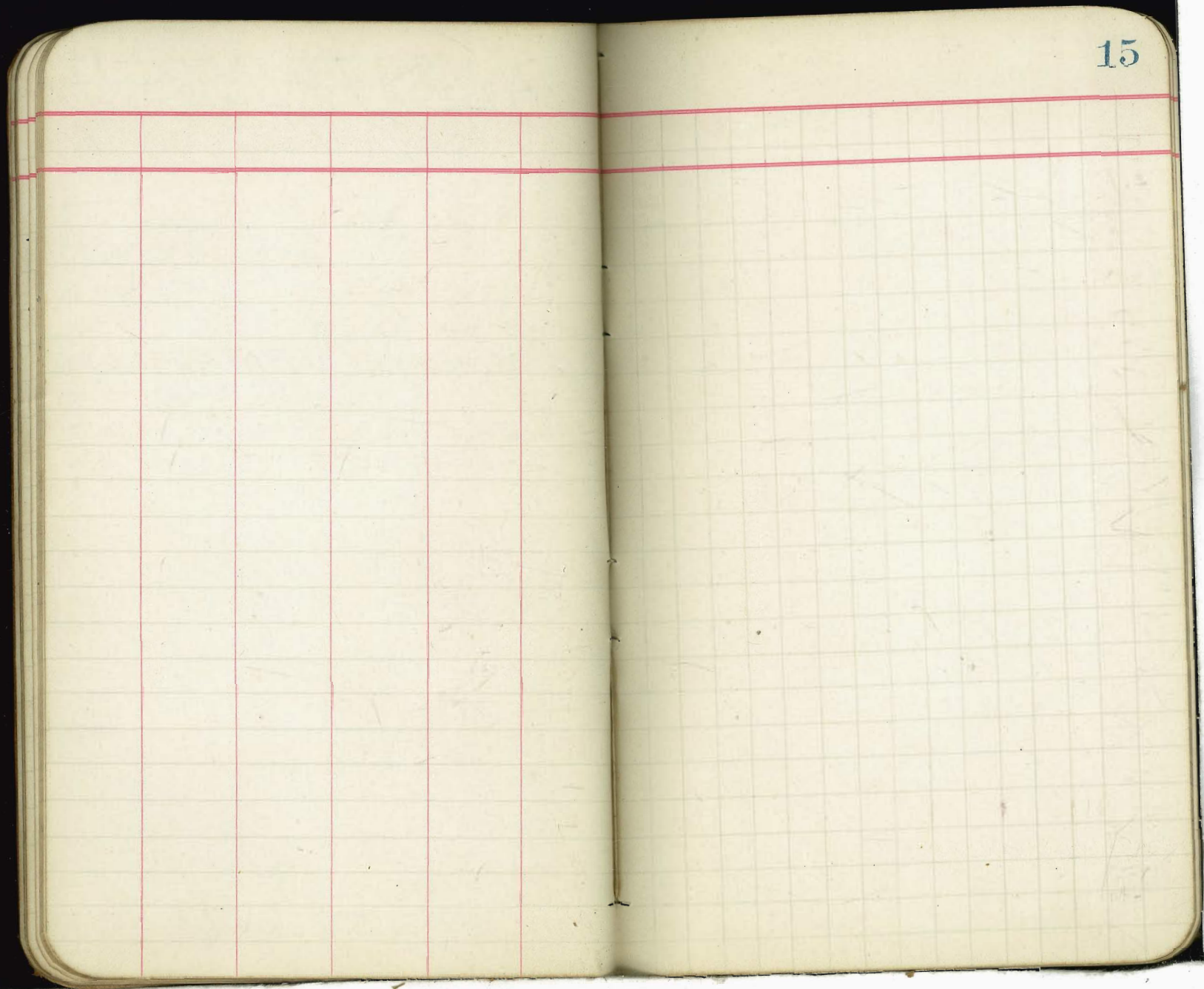
Δ	+	HT	-	Elev	BB.
T.P.			006	166.03	
T.P.	3.42	16945			
14+76			142.2	168.03	
15			168	164.77	
15+56			7.00	162.45	
T.P.	407	16652			
B.M.			980	156.72	156.72

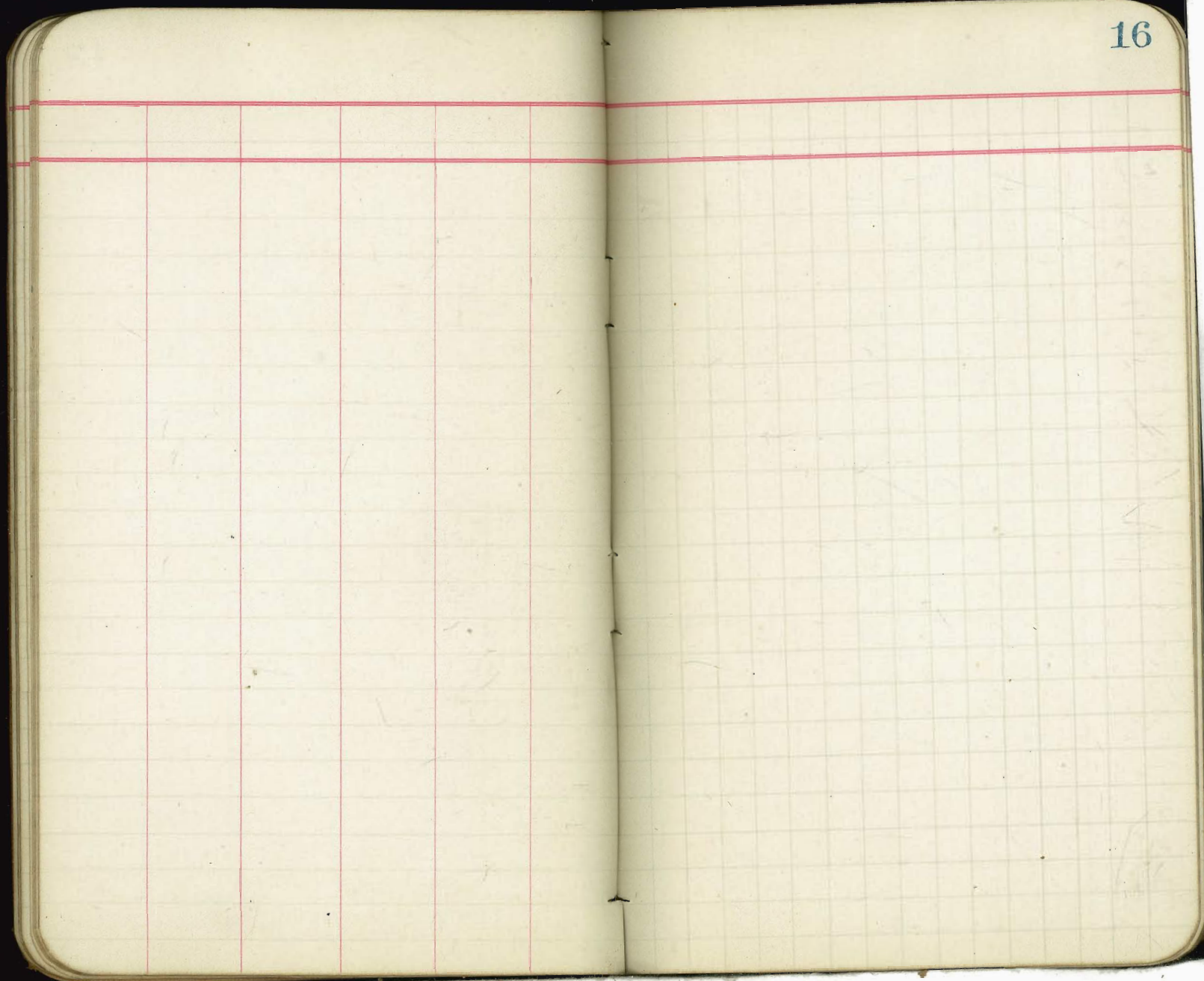
ALBATROSS ST. ¹⁴

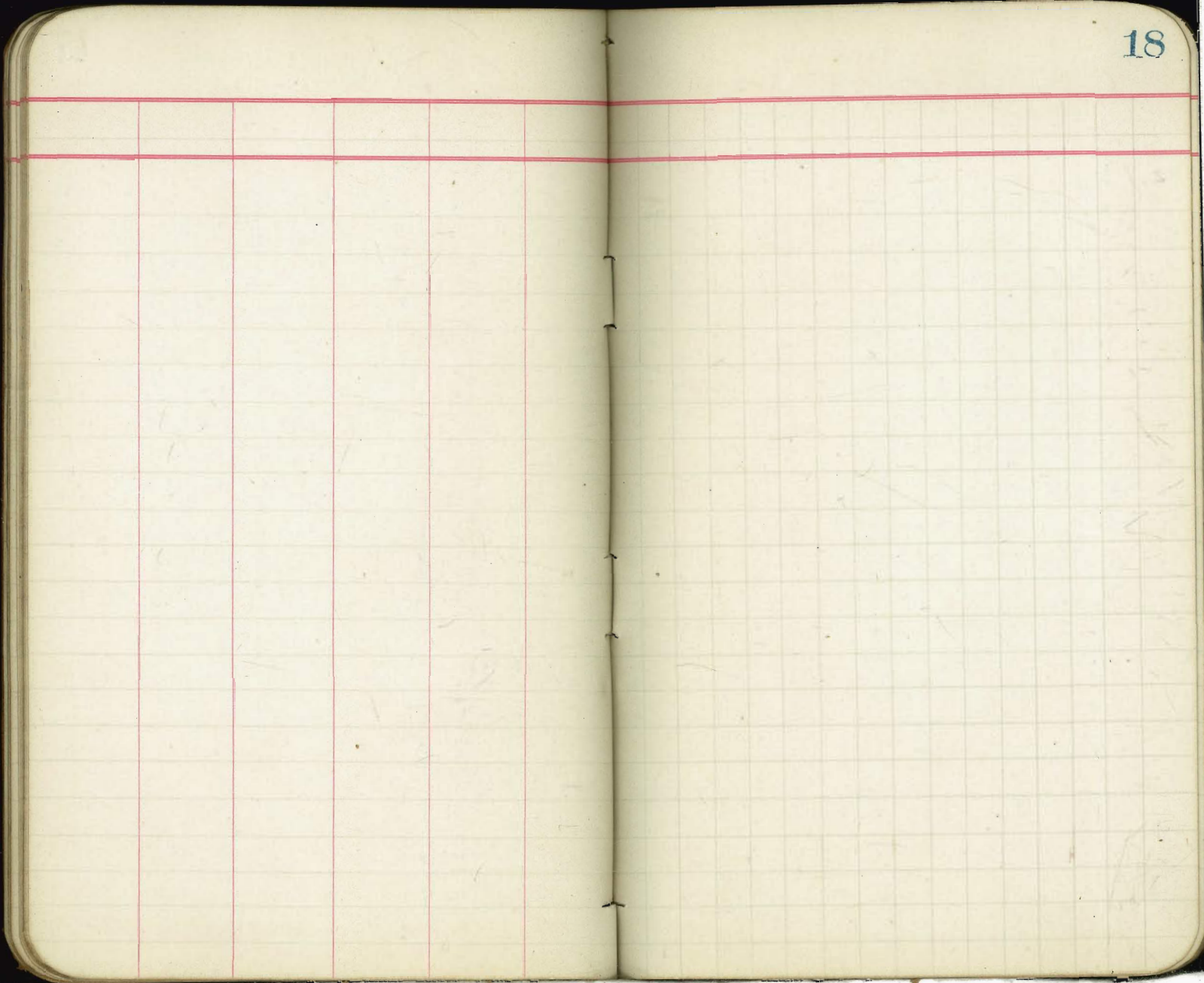
REMARKS.

JUNIPER & ALBATROSS ST.

End







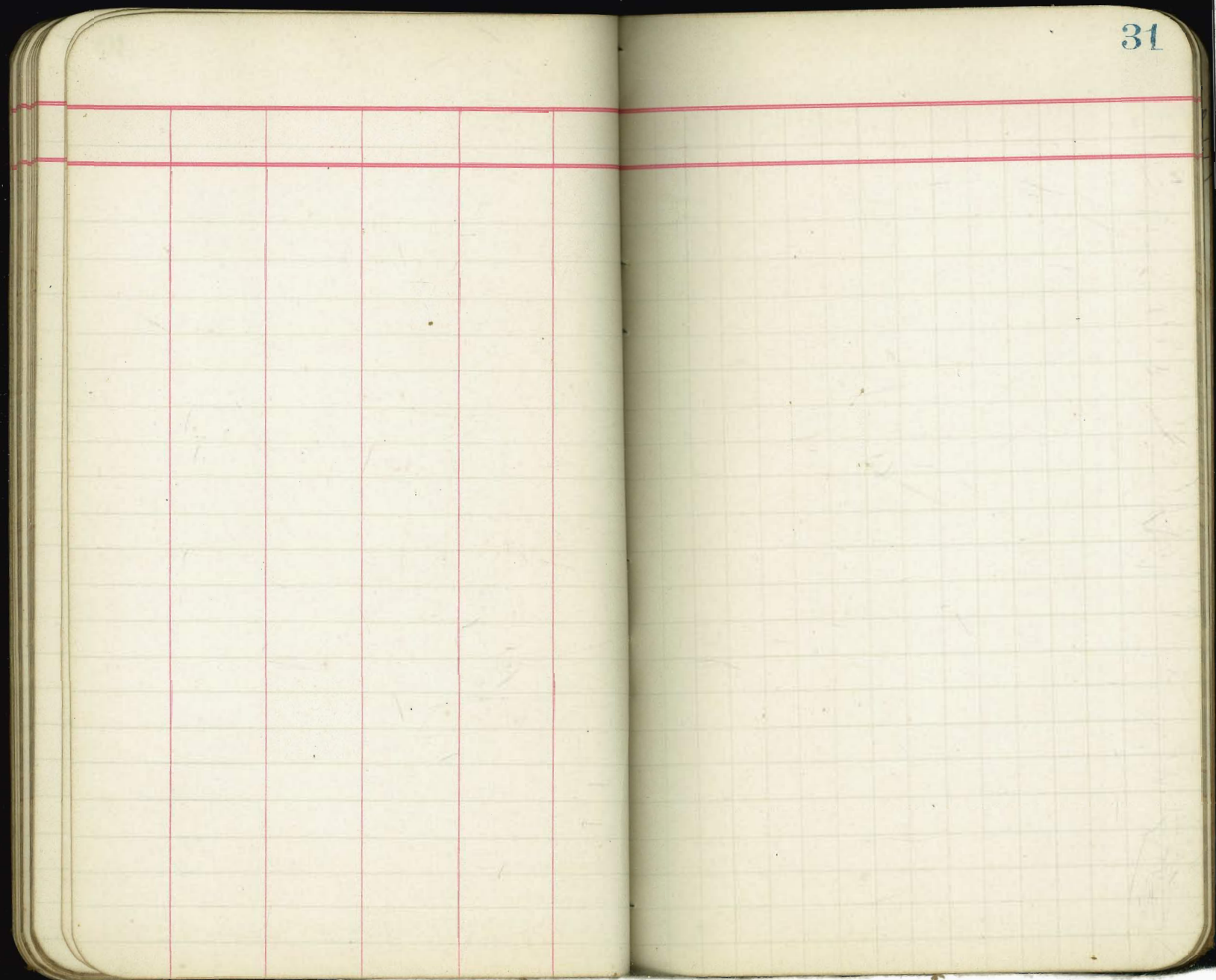
The image shows an open notebook with two pages. The left page is ruled with horizontal lines and has two vertical red lines: one near the left margin and one near the center. The right page is ruled with horizontal lines and has a single vertical red line near the left margin. The number '19' is printed in the top right corner of the right page. The pages are cream-colored and show signs of use, including some faint smudges and a small tear near the spine.

The image shows an open notebook with two pages. The left page is ruled with horizontal lines and has a red margin line on the left side and a red header line near the top. The right page is ruled with horizontal lines and has a red header line near the top. The number '21' is printed in the top right corner of the right page. The pages are cream-colored and show signs of use, including some faint smudges and a small tear near the spine.

The image shows an open notebook with two pages. The left page is ruled with horizontal lines and features a grid of vertical lines. Two vertical red lines are drawn, creating three columns of varying widths. The right page is ruled with horizontal lines and has a grid of vertical lines. The number '22' is printed in the top right corner of the right page. The pages are cream-colored and show signs of use, including some faint smudges and discoloration.

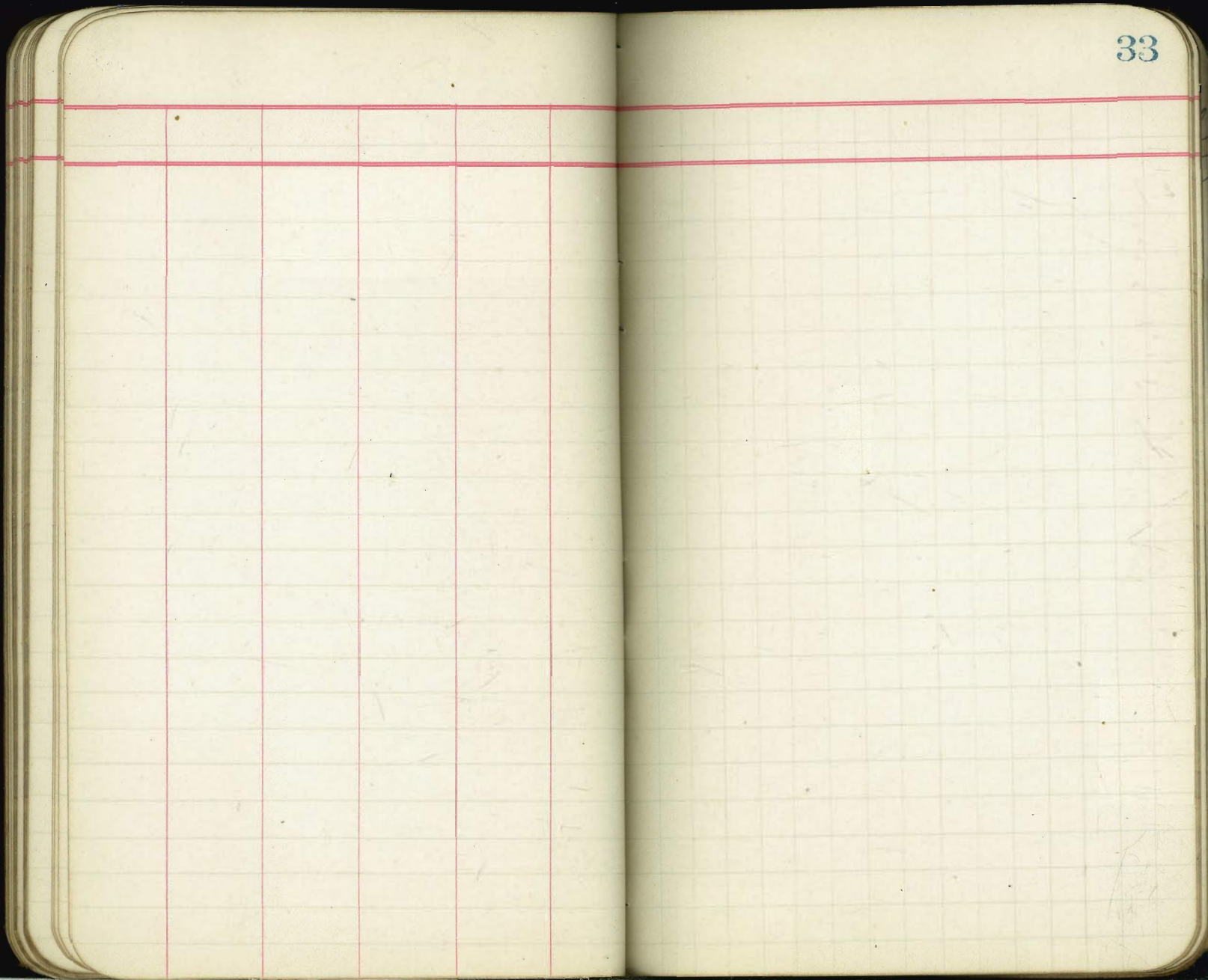
The image shows an open notebook with two pages. The left page is ruled with a grid of 6 columns and 18 rows. The right page is ruled with a grid of 18 columns and 18 rows. The number 25 is printed in the top right corner of the right page. The pages are cream-colored and show signs of use, including some faint smudges and a small tear near the spine.

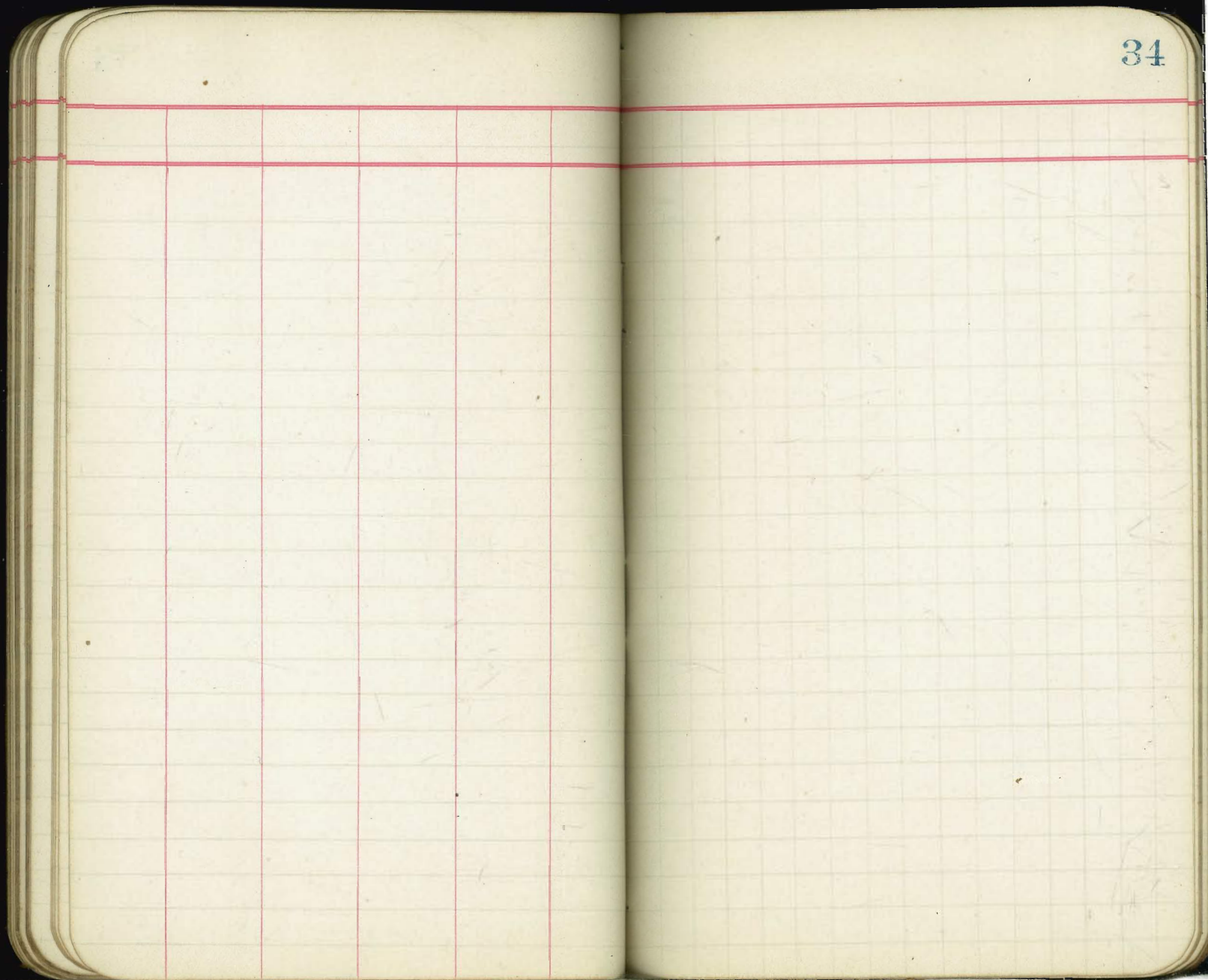
The image shows an open notebook with two pages. The left page is ruled with a grid and has four vertical red lines, creating five columns. The right page is ruled with a grid and has the number 30 in the top right corner. The pages are cream-colored and show some signs of use, such as faint smudges and a small dark spot on the left page.



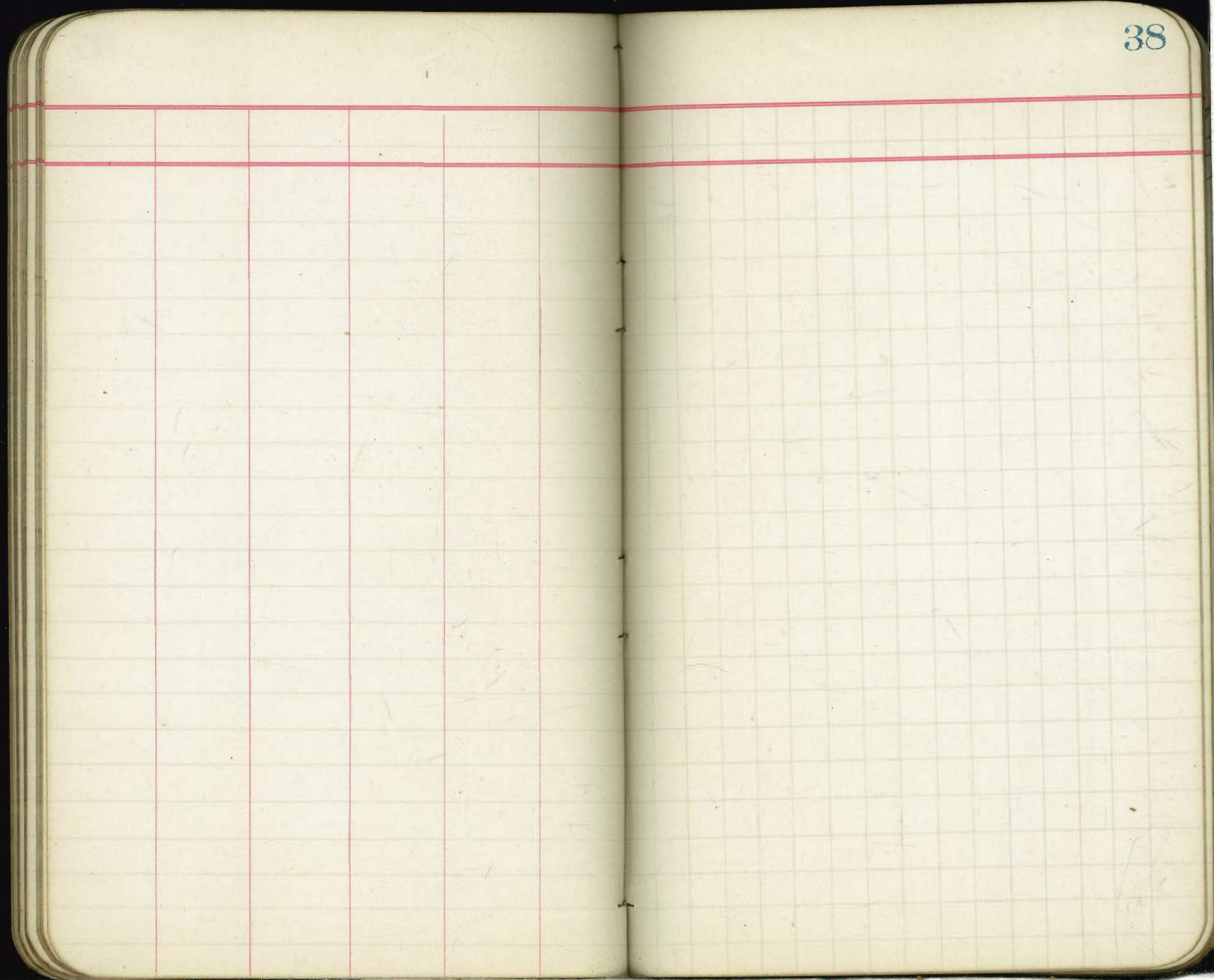
The image shows an open notebook with two pages. The left page is ruled with a grid of red lines, creating a table with 6 columns and 18 rows. The right page is ruled with horizontal lines and has the page number '32' in the top right corner. The pages are cream-colored and show signs of use, including some faint smudges and a small dark spot on the left page.

33



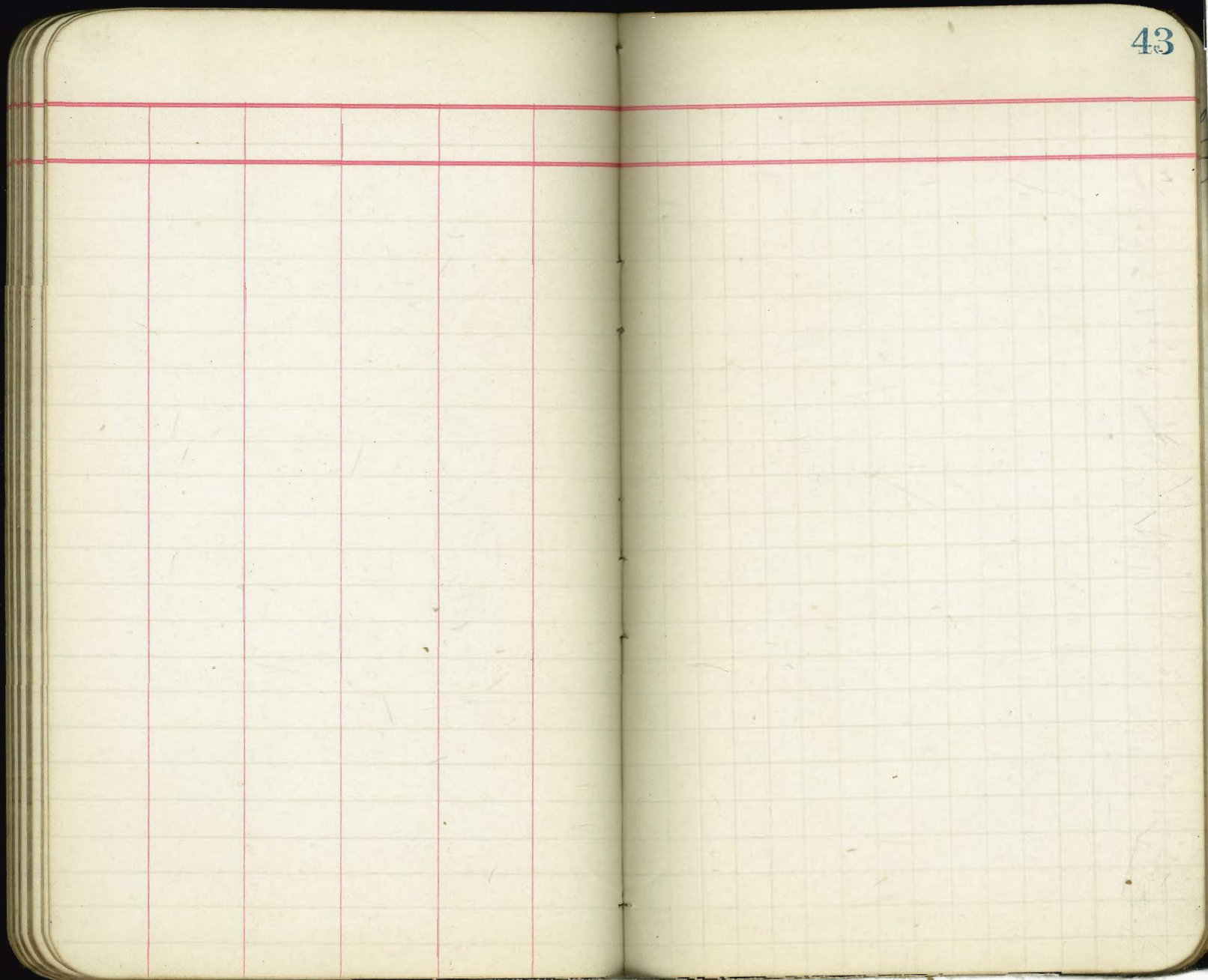


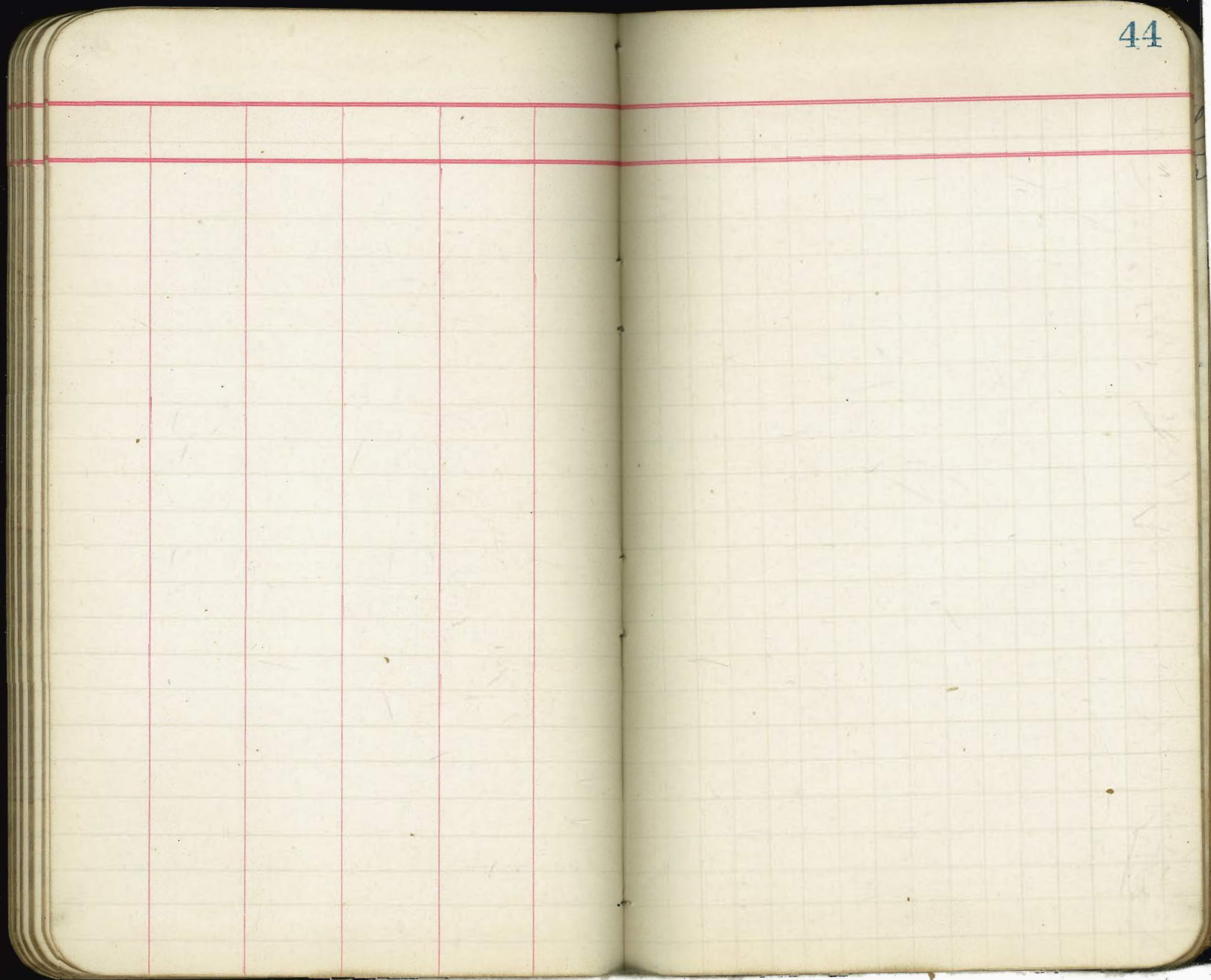
35

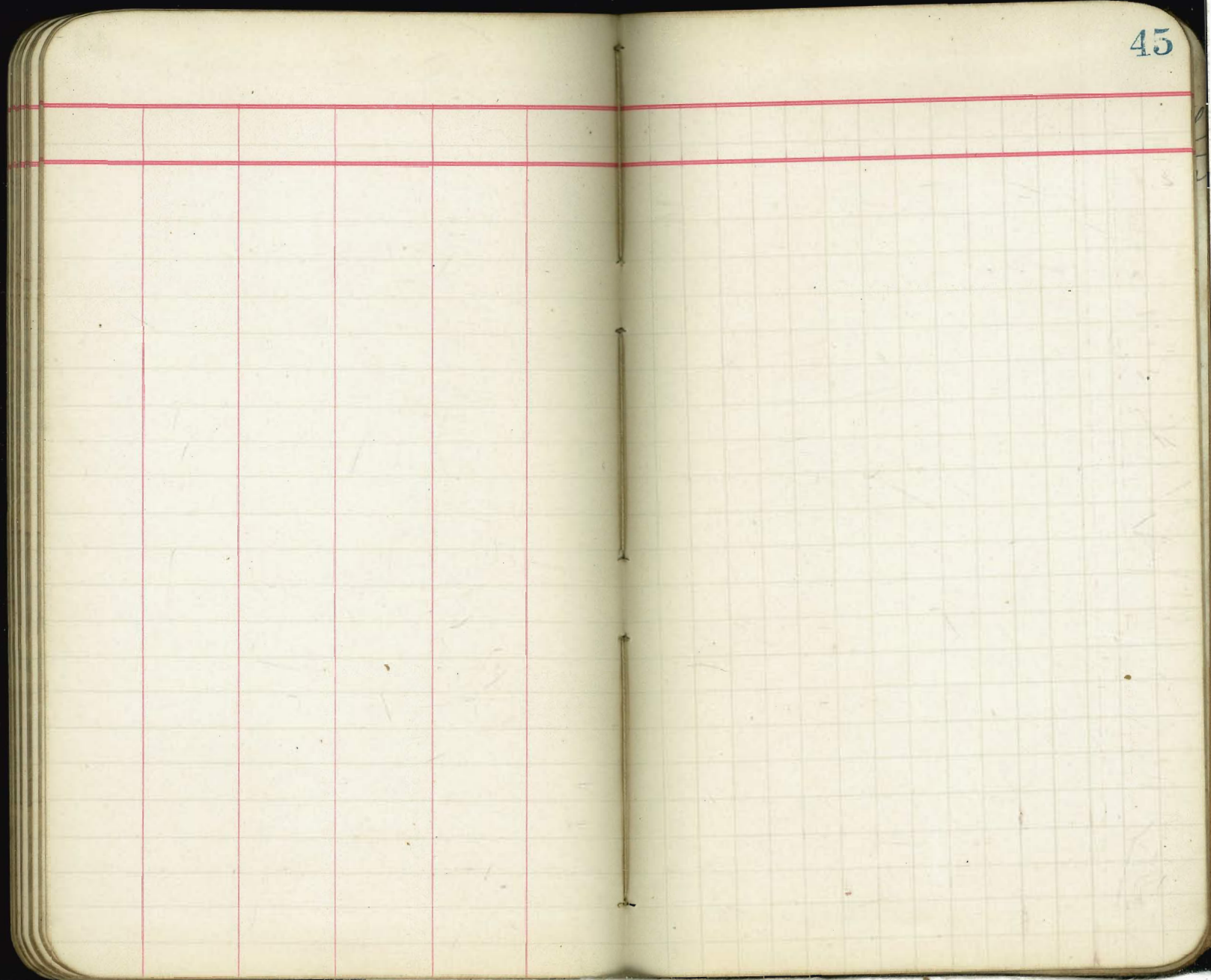


The image shows an open notebook with two pages. The left page is ruled with a grid of red lines, creating a table with 6 columns and 18 rows. The right page is ruled with horizontal lines and has the number '39' printed in the top right corner. The pages are cream-colored and show signs of use, including some faint smudges and a small mark in the bottom right corner of the right page.

The image shows an open notebook with two pages. The left page features a red margin line on the left side and a red grid line near the top. The right page has a red margin line on the left side. Both pages are ruled with light blue horizontal lines. The pages are otherwise blank, with some faint, illegible markings. The number '42' is printed in the top right corner of the right page.

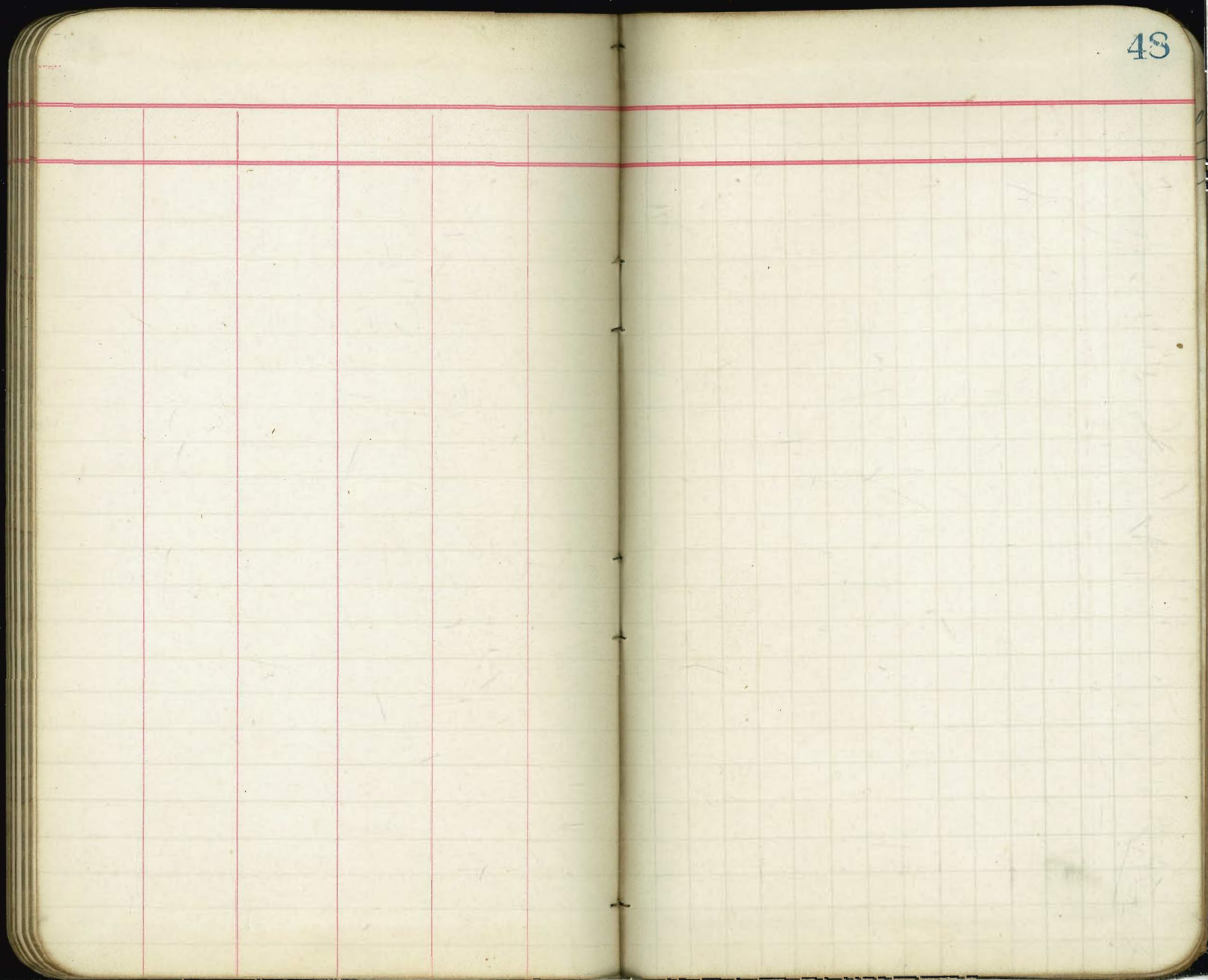


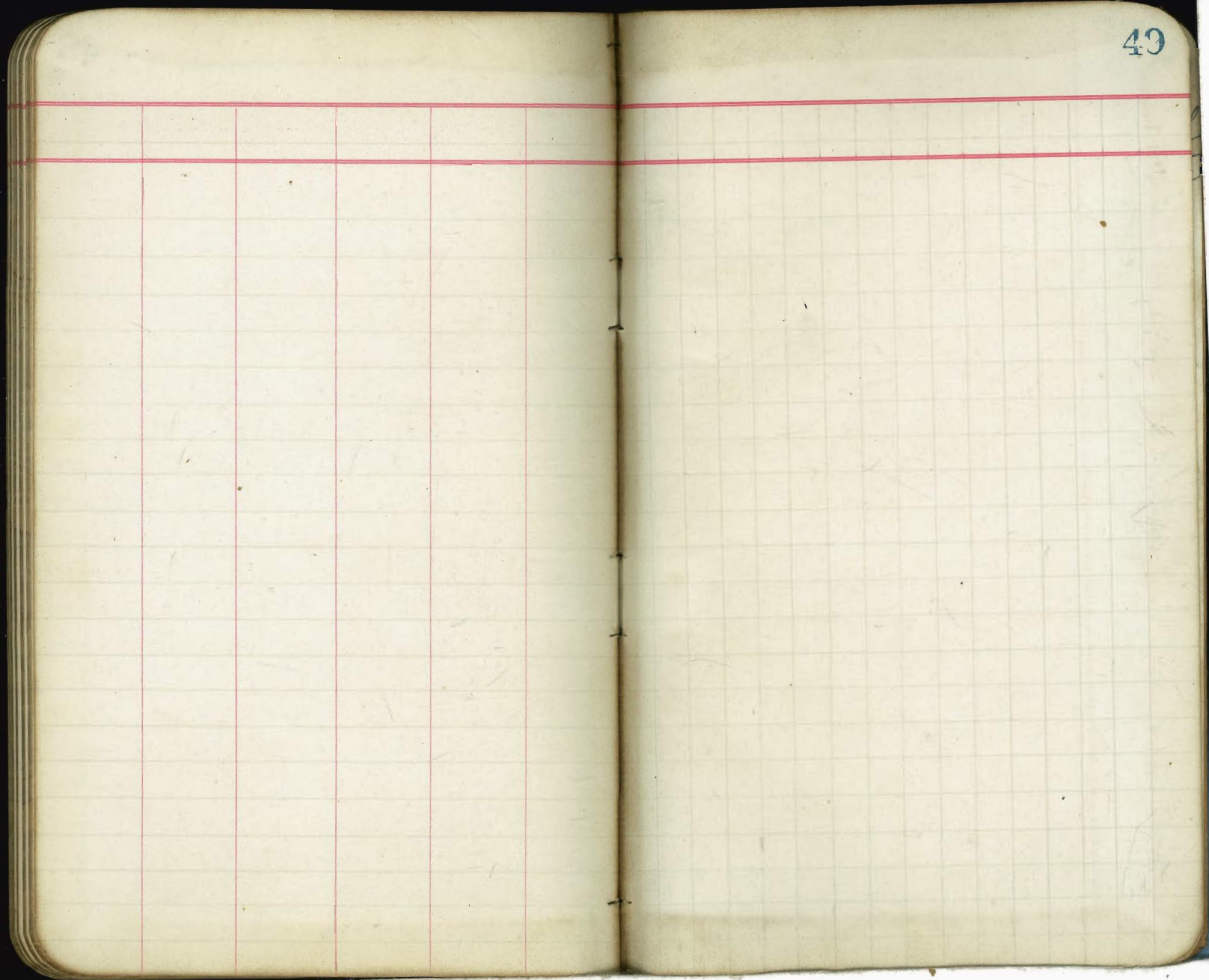




The image shows an open notebook with two pages. The left page is ruled with a grid and has two vertical red lines. The right page is ruled with a grid and has the number 46 in the top right corner. The notebook is placed on a white surface against a dark background.

The image shows an open notebook with two pages. The left page is ruled with horizontal lines and features a grid of vertical lines. Two vertical red lines are drawn, creating three columns of varying widths. The right page is ruled with horizontal lines and has a full grid of vertical lines. The number '47' is printed in the top right corner of the right page. The notebook is placed on a white surface against a dark background.





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

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100.00	0.44	100.00	0.87	99.99	1.31	81
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	81
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	81
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	81
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	81
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	81
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	81
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	81
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	81
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	71
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	71
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	71
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	71
14	97.03	24.19	96.92	24.62	96.81	25.04	96.70	25.46	71
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	71
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	71
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	71
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	71
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	61
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	61
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	61
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	61
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	61
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	61
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	61
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	61
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	61
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	51
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	51
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	51
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	51
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	51
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	51
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	51
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	51
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.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		

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