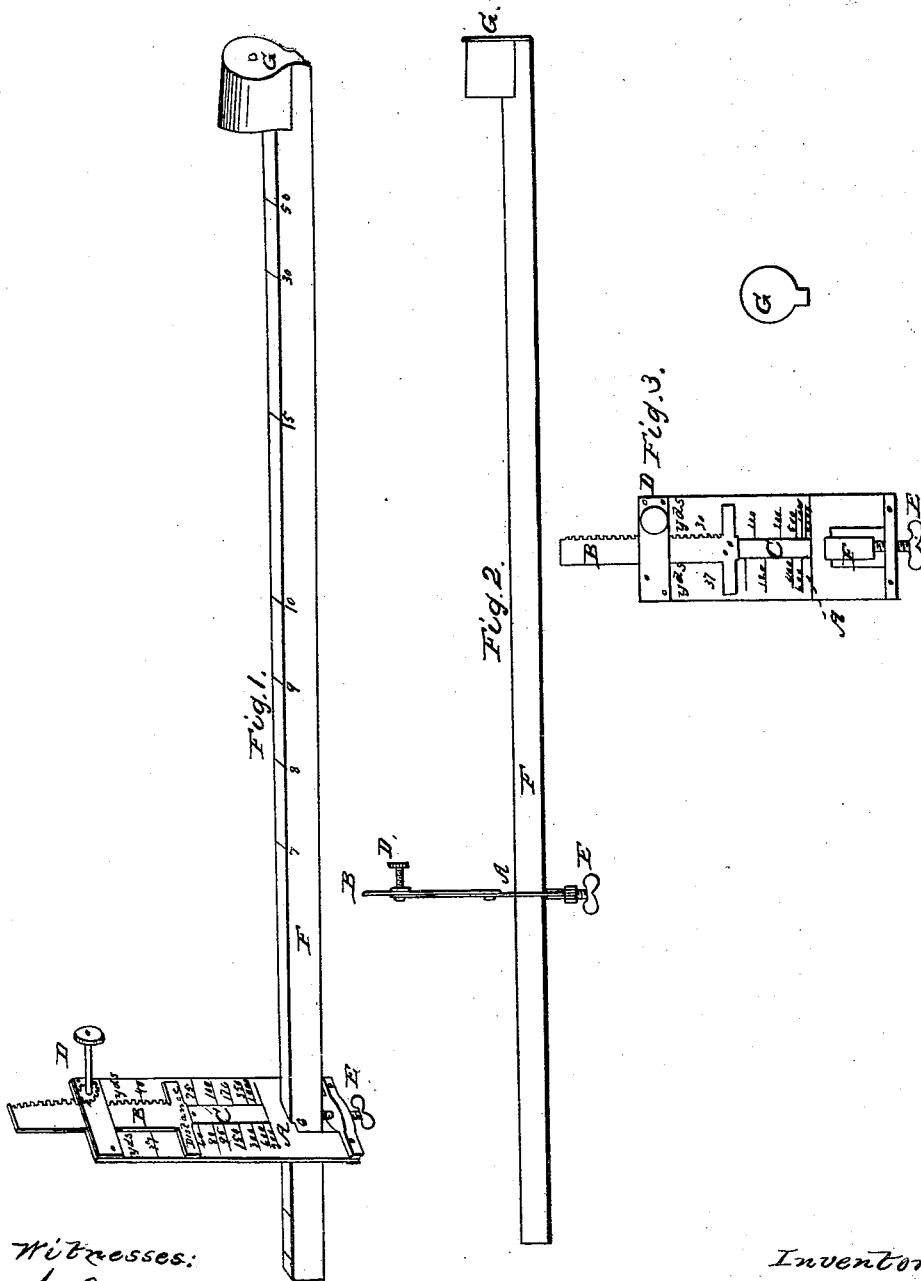


J. J. DALY.

Instrument for Measuring Distances.

No. 53,420.

Patented March 27, 1866.



Witnesses:
P. Bonn
L. Zeller

Inventor:
John J. Daly

UNITED STATES PATENT OFFICE.

JOHN J. DALY, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN INSTRUMENTS FOR MEASURING DISTANCES.

Specification forming part of Letters Patent No. 53,420, dated March 27, 1866.

To all whom it may concern:

Be it known that I, JOHN J. DALY, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and Improved Instrument for Measuring Distances; and I do hereby declare that the following is a full and exact description, to wit:

The nature of my invention consists in the arranging a scale so as to represent the chord of an arc and adjusting it to a rod corresponding to the radius of said arc. On either side of the aperture of the scale are lines, on which are placed figures that indicate the number of yards distant an object would be when viewed at such an angle. By means of a ratch and a cog-wheel the index is moved so as to take in the full size or dimension of the object viewed.

"Ready-reckoning measurer of distance" is the name I give my instrument, of which, as shown in the drawings, Figure 1 represents a perspective view; Fig. 2, a longitudinal elevation, and Fig. 3 a transverse section, of which A is the scale; B, index; C, aperture; D, thumb-screw; E, clamp-screw; F, rod, and G eye-piece.

On the scale, half an inch represents one degree and twenty-eight inches, and sixty-five hundredths ($28\frac{65}{100}$) represents the corresponding radius on the rod. By shortening the radius in proportion to the increased size of the object viewed, the same scale serves for many different sized objects.

Dimensions of the lines on the scale (from base of aperture:)

For	30 yards	Degrees.
"	31	3.696774
"	32	3.58125
"	33	3.472727
"	34	3.37059
"	35	3.274286
"	36	3.18333333
"	38	3.0158
"	40	2.865
"	42	2.72857
"	44	2.604545
"	46	2.4913
"	48	2.3875
"	50	2.292
"	55	2.0834545
"	60	1.91
"	65	1.763077

For	70 yards	Degrees.
"	75	1.63714
"	80	1.528
"	90	1.4325
"	100	1.2733333
"	115	1.146
"	125	.9952
"	150	.9168
"	176	.764
"	200	.65113636
"	250	.573
"	37	.4584
"	39	3.0973
"	41	2.92846
"	43	2.795122
"	45	2.66511628
"	47	
"	49	2.3387755
"	52	2.203846
"	58	1.975862
"	68	1.68529
"	72	1.59166666
"	78	1.46923
"	85	1.348235
"	95	1.2063158
"	110	1.041727
"	120	.955
"	130	.88153846
"	160	.71625
"	225	.5093333
"	300	.382
"	400	.2865
"	500	.2292
"	880	.130227272
"	1760	.065113636
"	350	.3274286
"	600	.191
"	1000	.1146
"	2000	.0573

Dimensions of the points on the rod (from eye-piece:)

For an object of	Ft. In.	Inches.	Minus.
4	10	35.565517	$\frac{3}{10}$
"	"	5 0	34.38
"	"	5 2	33.2709677
"	"	5 3	32.742857
"	"	5 4	32.23125
"	"	5 5	31.7353846
"	"	5 6	31.254545
"	"	5 8	30.33528
"	"	5 9	29.9

	Ft.	In.	Inches.	Minus.
For an object of 5 10 it is	5	10	29.46857	$\frac{3}{10}$
" " 6 0 "	6	0	28.65	"
" " 6 3 "	6	3	27.504	"
" " 6 6 "	6	6	26.4461538	"
" " 7 0 "	7	0	24.55715	"
" " 7 6 "	7	6	22.92	"
" " 8 0 "	8	0	21.4875	"
" " 8 $\frac{1}{2}$ 0 "	8	$\frac{1}{2}$ 0	20.22353	"
" " 9 0 "	9	0	19.1	"
" " 10 0 "	10	0	17.19	"
" " 11 0 "	11	0	15.6272725	"
" " 12 0 "	12	0	14.325	"
" " 13 0 "	13	0	13.2230769	"
" " 14 0 "	14	0	12.278575	"
" " 15 0 "	15	0	11.46	"
" " 16 0 "	16	0	10.74375	"
" " 17 0 "	17	0	10.11176	"
" " 18 0 "	18	0	9.55	"
" " 19 0 "	19	0	9.0473684	"
" " 20 0 "	20	0	8.595	"
" " 25 0 "	25	0	6.876	"
" " 30 0 "	30	0	5.73	"
" " 35 0 "	35	0	4.91143	"
" " 40 0 "	40	0	4.2975	"
" " 45 0 "	45	0	3.82	"
" " 50 0 "	50	0	3.438	"
" " 55 0 "	55	0	3.12545	"
" " 60 0 "	60	0	2.865	"

I allow three-tenths of an inch for the space between the eye-piece of the instrument and the crystalline lens of the spectator's eye.

The instrument can be used in a horizontal or in any other direction, as the object or dimension viewed may suggest, and can also be used with or without a telescope or perspective-glass. If a perspective-glass be used, the eye-piece of the glass should be the fixed point and fixed at the eye-piece of the distance, measurer.

Conditions to be complied with when using the ready-reckoning measurer of distance: An object viewed through this instrument is diminished in apparent size in proportion to its distance from the eye. Therefore, the size of object being known and the scale placed at a point on the rod marked for such-sized object, and the index being moved so as to take in fully and exactly, in the open space of the aperture, the dimension of the object viewed, the figures on the line at the base of the index will indicate the distance in yards. The eye-piece should be held close as possible to the eye.

To increase the capacity of the instrument it is only necessary to view a large object with the scale placed at a point on the rod marked for a smaller size, thus: If the dimension viewed be one hundred feet and the scale be placed at a point on the rod marked for an object of ten feet, the actual distance will be ten times as great as that indicated on the scale, and so on of other sizes and proportions.

The size of objects can be found on the rod when the distance is known. The index being fixed at the line indicating such distance and the scale moved on the rod till the object viewed fill the aperture, at the point on the rod where the scale rests will be found the size of the object.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of the scale A, index B, thumb-screw D, and clamp-screw E, in combination with the rod F and eye-piece G.

JOHN J. DALY.

Witnesses:

J. BORN,
L. ZELLER.