

A. VAN RENSSELAER & F. H. TENNEY.
ELAPSE TIME COMPUTER AND CENTURY CALENDAR MACHINE.

APPLICATION FILED NOV. 7, 1911.

Patented Oct. 15, 1912.

11 SHEETS—SHEET 1.

1,041,204.

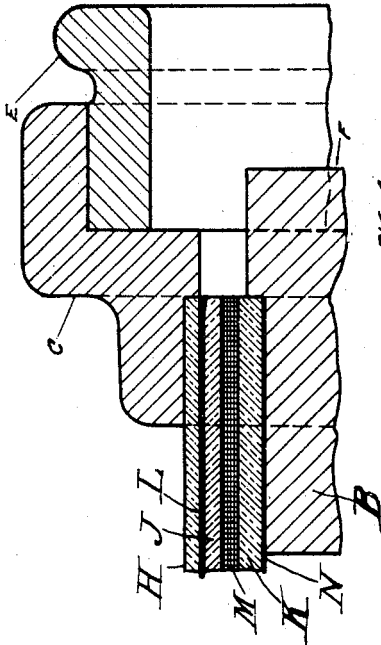


FIG. 4.

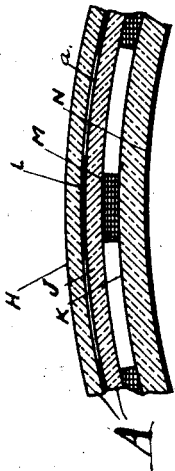


FIG. 3.

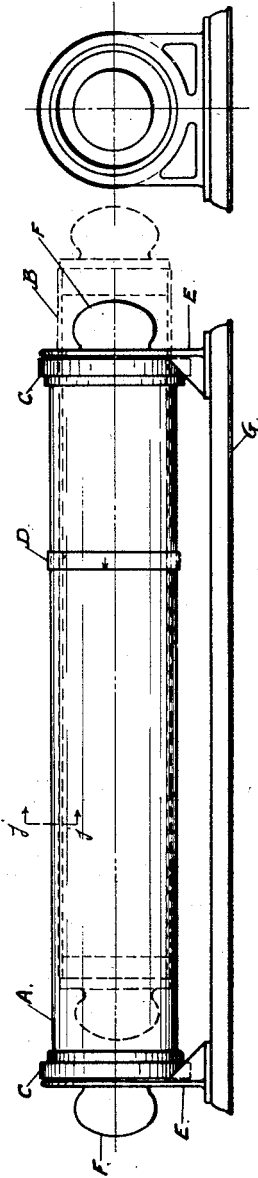


FIG. 1.

FIG. 2.

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11 SHEETS—SHEET 2.

FIG. 5

L.	a.	d. — JAN														
	a.	FEB														
p	a.	MCH			1	2	3									
	a.	APR			1	2	3									
a.	a.	MAY			1	2	3	4								
	a.	JUNE			1	2	3	4								
a.	a.	JULY			1	2	3	4	5							
	a.	AUG			1	2	3	4	5							
a.	a.	SEP			1	2	3	4	5							
	a.	OCT			1	2	3	4	5	6						
a.	a.	NOV			1	2	3	4	5	6						
	a.	DEC			1	2	3	4	5	6	7					

7. LEAP YEAR.

WITNESSES:

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11 SHEETS—SHEET 3.

L.

FIG 5.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	SEP
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	OCT
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	NOV	
8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	DEC	

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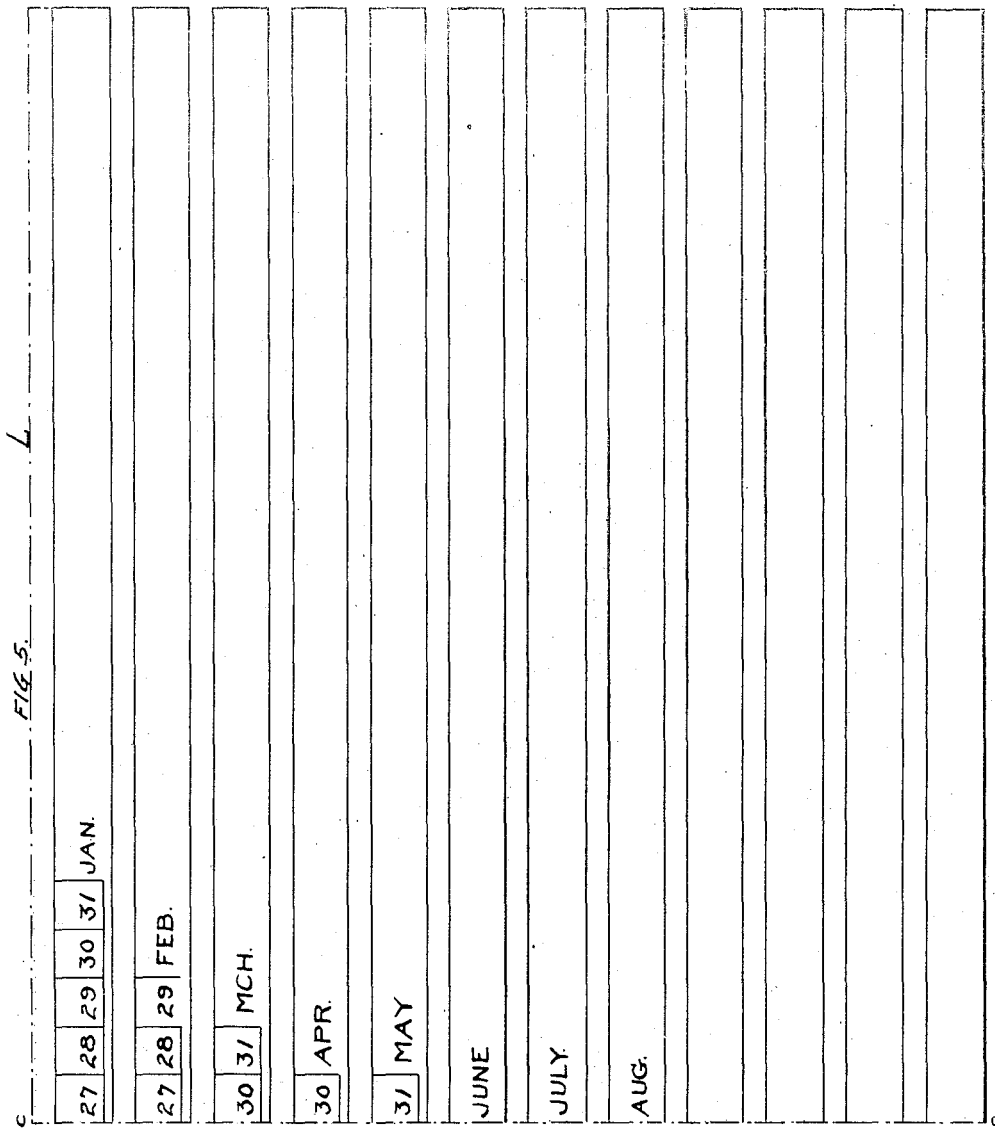
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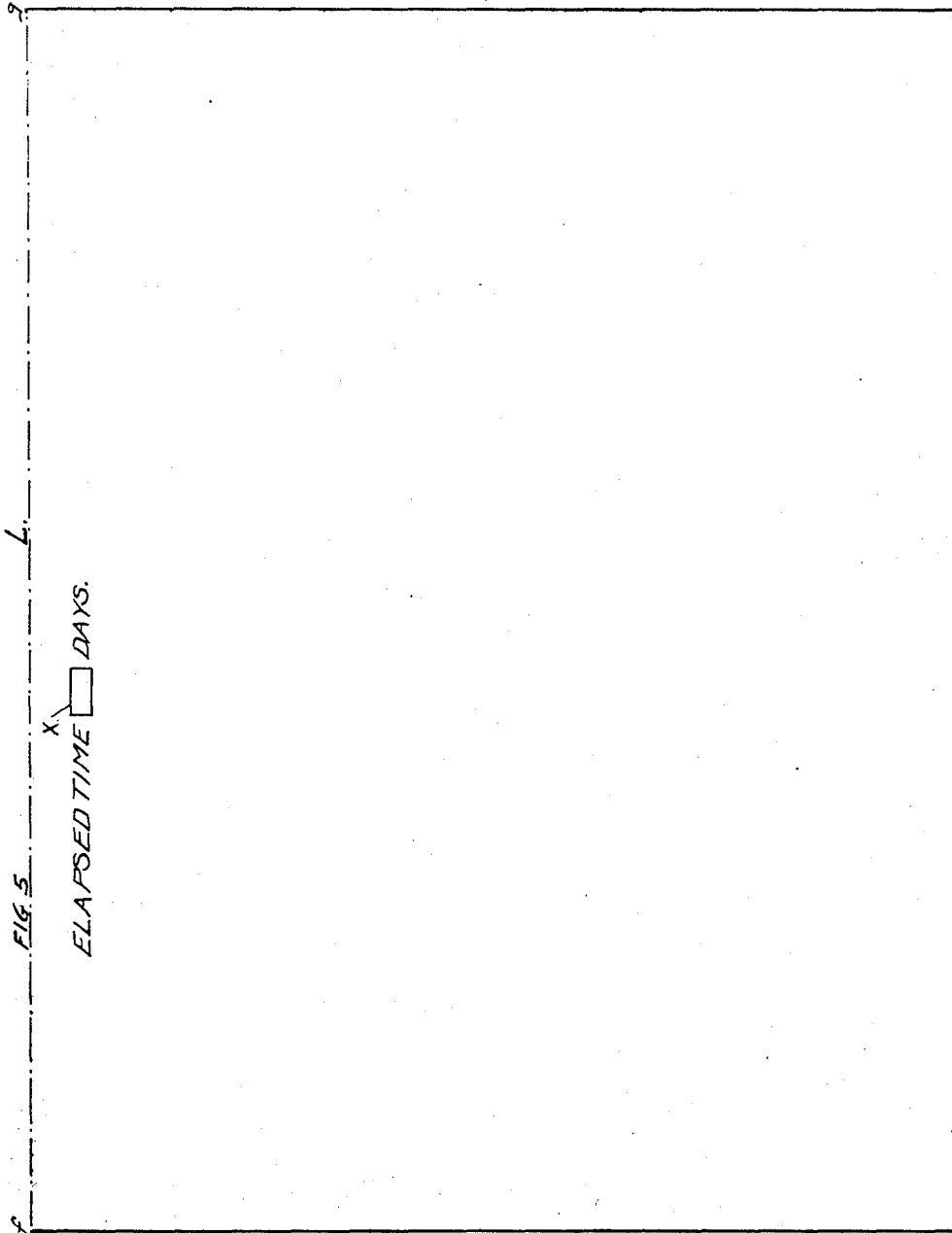
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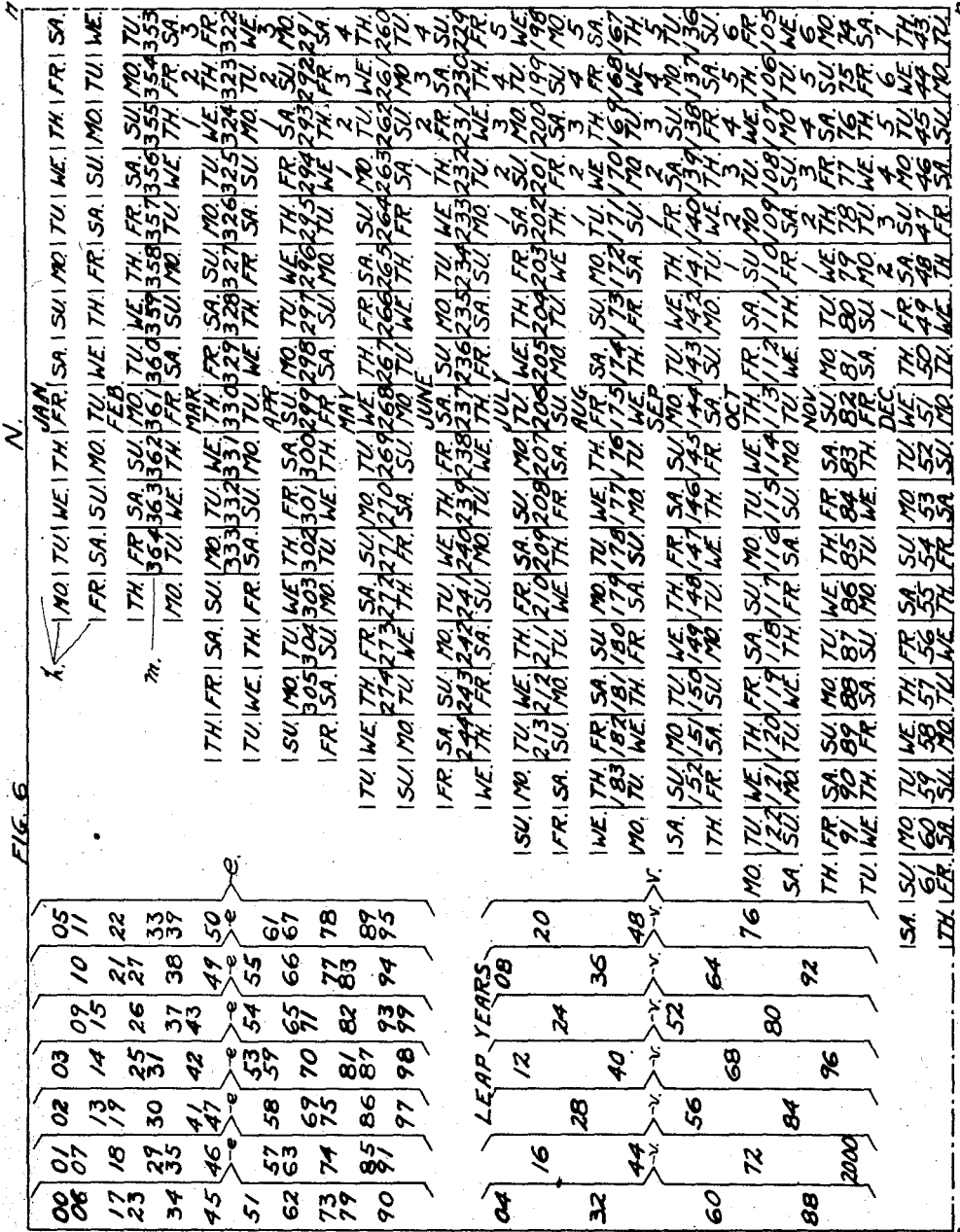
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11 SHEETS—SHEET 6.



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11 SHEETS—SHEET 9.

N.

FIG. 6.

8	—	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112	
9	6	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0	9	8	7	6	5
10	3	6	3	5	3	4	3	3	3	2	3	1	3	0	3	2	1	0	9	8	7
11	0	5	3	0	4	3	0	3	0	2	3	0	1	3	0	2	1	0	9	8	7
12	7	5	2	7	4	2	7	2	7	1	0	2	6	7	2	6	5	2	5	2	5
13	4	4	3	2	4	1	2	4	0	2	3	9	2	3	8	2	3	5	2	3	4
14	1	4	2	1	1	2	1	1	2	0	2	0	1	9	9	1	8	9	7	9	6
15	1	8	3	1	8	2	1	8	0	1	7	9	1	7	8	1	7	6	7	5	7
16	1	5	2	1	5	0	4	9	1	4	8	1	4	7	1	4	6	4	5	4	4
17	2	2	1	2	0	1	9	1	8	1	7	1	6	1	5	1	4	1	3	1	3
18	1	9	1	8	1	8	1	8	5	1	8	1	8	1	8	1	8	5	1	8	1
19	6	1	6	0	1	5	9	1	5	8	1	5	7	1	5	6	1	5	4	1	4

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11 SHEETS—SHEET 10.

1,041,204.

N

FIG. 6.

11	10	9	8	7	6	5	4	3	2	1	136536436336236	136035935835735635535435352351																	
13	4	53	4	13	4	13	3	7	13	3	303273283	27326325324323221320																	
13	4	13	3	13	113	013	093	0813	0713	0613	0513	0413	0313	0213	013	002	992	982	972	962	952	942	932	922	912	902	89		
12	8	32	8	212	8	1280	2192	7812	7712	762	752	7412	7312	722	712	7026	6926	6826	6726	6626	6526	6426	6326	6226	6126	6026	5926	58	
12	5	22	5	12	502	492	4824	724	624	524	424	324	224	124	402	392	382	372	362	352	342	332	322	312	302	292	282	27	
12	2	12	20	21	92	182	72	62	52	42	32	22	12	102	92	82	72	62	52	42	32	22	12	02	192	182	172	16	
190	189	188	187	186	185	184	183	182	181	180	179	178	177	176	175	174	173	172	171	170	169	168	167	166	165	164	163	162	161
159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144	143	142	141	140	139	138	137	136	135	134	133	132	131	130
128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	102	101	100	
97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	
66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	
35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	

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11 SHEETS—SHEET 11.

FIG. 6

N

35034	934834	734634	534434	334234	134033	9133833	73361335
3193	813	713	613	513	413	313	213
13	03093	0813	0713	0613	0513	0413	
28828	72862	8528	4283	2282	28	1280	279278277276275274
2572	562	552	542	532	522	512	50249248247246245244243
2262	252	242	232	222	212	202	192182171215214213
1951	941	931	921	911	901	891	88187186185184183182
1641	631	621	611	601	591	581	57156155154153152
1331	321	311	301	291	281	271	26125124123122121
1021	01	1001	99	98	97	96	9594939291
71	170	169	168	167	166	165	1641631621611601
40	139	138	137	136	135	134	133132
9	18	17	16	15	14	13	1211

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UNIT STATES PATENT OFFICE.

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ELAPSE-TIME COMPUTER AND CENTURY-CALENDAR MACHINE.

1,041,204.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed November 7, 1911. Serial No. 659,031.

To all whom it may concern:

Be it known that we, ALLEN VAN RENSSELAER and FRED H. TENNEY, citizens of the United States, residing at 1920 West Riverside avenue and 1507 West Fourth avenue, respectively, in the city of Spokane, in the county of Spokane and State of Washington, have invented a new and useful Elapse-Time Computer and Century-Calendar Machine, of which the following is a specification.

Our invention consists in the novel arrangement of a calendar upon one chart and a calendar and numbers of elapsed days upon another chart, and the arrangement and construction of these two charts in relation to each other; and the objects of our invention are, first, to determine expeditiously the number of days, not exceeding three hundred and sixty-five (365), that will elapse between two given dates; second, to determine expeditiously the date on which the last day of a given number of days, not exceeding three hundred and sixty-five, calculated from a given date, will fall; third, to obtain a calendar for any year in the twentieth century. We attain these objects by the mechanisms illustrated in the accompanying drawings, in which similar characters of reference indicate similar divisions and sub-divisions of parts.

Figure 1 is a side elevation of the entire machine in which no part of the two charts, herein before mentioned and hereinafter described, is visible, but will be on the machine itself, because of the difficulty and impossibility of practically executing a drawing, making any portion of these charts visible; Fig. 2 is an end elevation of the entire machine; Fig. 3 is a part vertical cross-section taken on line *j j* of Fig. 1, the scale of which is to the scale of Fig. 1 as 12 is to 1; Fig. 4 is a part section through end of Fig. 1, and is drawn to the same scale as Fig. 3; Fig. 5 is one of the two charts and shall be referred to in the detailed description as chart L. This figure is drawn on Sheets 2 to 5 inclusive, which sheets must be joined as follows to make the entire figure: *b f* of Sheet 2 to *b f* of Sheet 3, *c g* of Sheet 3 to *c g* of Sheet 4, and *f g* of Sheet 3 to *f g* of Sheet 5; Fig. 6 is the other of the two charts and shall be referred to in the detailed description as chart N. This figure is drawn on Sheets 6 to 11 inclusive, which

sheets must be joined as follows to make the entire figure: *n r* of Sheet 6 to *n r* of Sheet 7, *o s* of Sheet 7 to *o s* of Sheet 8, *q r* of Sheet 6 to *q r* of Sheet 9, *r s* of Sheet 7 to *r s* of Sheet 10, and *s t* of Sheet 8 to *s t* of Sheet 11.

Chart L and chart N, Fig. 4, are the essential parts of this machine. Chart L consists, first, of calendar *d*, which is a calendar of all the months and days of the months in a year, so arranged that the number of days from any date in any month to the date appearing directly thereunder in the succeeding month, is in every instance thirty-one (31); second, of slots *a* through which, when the machine is made up as hereinafter described, can be read chart N; third, of common year indicating arrow *p* and leap year indicating arrow *k*; fourth, of elapsed-time opening *x*.

Chart N consists of, first, calendar *h*, on which the months and days of the months in a year are arranged in the same manner as on calendar *d*, chart L; on calendar *h* occur and reoccur the days of the week, also; second, elapsed-days numbers *m*, which is a chart within itself made up of repetitions of numbers from 1 to 365 inclusive, which numbers are arranged in twenty-three rows in such relation to each other that the difference between any number in any row and the number in the row directly over it, is in every instance thirty-one (31); 365 must be added to numbers from 1 to 30 in row *z* and from 1 to 31 in row *y*, in each instance, to make this general scheme hold good as to rows *y* and *z* and the row directly under each of them; the numbers in elapsed-days numbers *m*, it will be observed, occur in many instances within the same confine of space as calendar *h*: third, brackets *e* which brackets embrace the common years in the twentieth century: fourth, brackets *v* which brackets embrace the leap years in the twentieth century.

Referring specifically to Figs. 1, 3 and 4 of the accompanying drawings, the base G and the supports E, constitute the frame work of the machine. The principal parts of the device are, first, combination cylinder A, Fig. 3, which is composed of two transparent cylinders, H and J, Fig. 4, and chart L, above described, between them, all snugly fitted together and securely fastened together with cement and rings C, so as to

operate as a unit. Rings C revolve on brackets E with a sliding fit; second, combination cylinder B, Fig. 4, which is composed of transparent cylinder K, Fig. 4, and chart N, above described, which chart is firmly fastened to the inside of said transparent cylinder K. Combination cylinder B operates inside combination cylinder A. Felt strips M, Fig. 4, which are about .004 of an inch in thickness, are pasted on the inside of combination cylinder A, in such a manner as not to obstruct the vision to chart N through slots *a* in chart L. Felt strips M form a cushion so that combination cylinder B can be rotated in, and slid in and out of combination cylinder A, with a free and easy motion, by means of wooden knobs F firmly fastened to the ends of combination cylinder B. Indicator D is a narrow band extending from one-half to two-thirds of the distance around the outside of combination cylinder A, with an indicating point at one end, the band being made of elastic material so that it clasps firmly to combination cylinder A by virtue of its elasticity, and can be slid laterally and cylindrically so that the indicating point can be placed at any point on the surface of combination cylinder A. Transparent cylinders H, J and K will be made of material of such quality and degree of transparency that chart N can be read readily through the three. Charts L and N are placed in the proper relation to each other to accomplish the objects above set forth.

The method of operating this machine to attain the objects above set forth, is as follows: To determine the number of days that will elapse between two given dates, place indicator D, Fig. 1, on the later of the two given dates, on calendar *d*, chart L, then rotate and slide combination cylinder B until the earlier of the two given dates appears on calendar *h*, chart N, in slot *a* directly over the date on which indicator D has been set; the number of elapsed days can then be read on elapsed-days numbers *m*, chart N, in elapsed-time opening α . If February 29 intervenes between the two given dates, add one to the result thus obtained. The moving parts may be revolved as a unit to a position where elapsed-time opening α will be visible to the operator, without disturbing the setting. To determine on what date the last day of a given number of days, calculated from a given date, will fall, rotate combination cylinder B in its normal position until the month containing the given date appears in slot *a*, on calendar *h*, chart N, over the month on calendar *d*, chart L, in which the last day will fall; the month in which the last day will fall can be, and must be calculated mentally; with the cylinders in this position, a number will be read on elapsed-days numbers *m* in elapsed-time

opening α , which will be near the given number. If this number is smaller than the given number, slide combination cylinder B directly to the right; if greater, to the left, until the given number does appear in elapsed time opening α . With the given number of days in elapsed-time opening α , the date on which the last day of the given number of days, will fall, will be found on calendar *d*, chart L, directly under the given date from which the calculation is made. If February 29 intervenes, the last day will fall a day earlier than the date thus obtained. To obtain the calendar for any year in the twentieth century, if the year is a common year, place the point of common year indicating arrow *p*, chart L, to the point of bracket *e*, chart N, embracing the year for which the calendar is sought. When thus set, the two charts will form the calendar, the days of the weeks appearing on calendar *h*, chart N, in slots *a* over the dates on calendar *d*, chart L. If the year for which the calendar is sought, is a leap year, place the point of leap year indicating arrow *k* to the point of bracket *v* embracing the year for which the calendar is sought.

Having thus fully described our machine, what we claim as new and desire to secure by Letters Patent is:—

1. In an elapse time computer and century calendar machine, the combination of an outer chart and an inner chart, with an arrangement on the outer chart of a calendar of the months and the dates of the months in regular order, in twelve horizontal, parallel rows with slots between the rows, and with a calendar of the months and dates of the months on the inner chart arranged in the same manner as the one on the outer chart except that there are no slots between the rows, and with an arrangement of numbers, called herein elapsed-days numbers, on the inner chart, ranging from 1 to 365 inclusive, in such order and in such relation to each other and in such relation and position to the calendar on the inner and outer charts and with the two calendars in such relation and position to each other, in short, the whole arrangement of the dates of the calendars and the elapsed-days numbers being in such manner that when two dates are selected, with not to exceed 365 days between them, and the inner chart is slid or slid and rotated, or placed by any means, in such a position to the outer chart that the earlier of the two dates selected will appear in the slot in the outer chart directly over the month containing the later date selected and at a point directly over said later date, the later date being located on the calendar on the outer chart, an elapsed-days number will invariably appear at a fixed point below the calendar on the outer chart in an opening in the outer chart, called here-

in elapsed-time opening, provided at that point, which will be the number of days that will elapse between the two dates selected.

2. In an elapse time computer and century calendar machine, the combination of an outer chart and an inner chart, with an arrangement on the outer chart of a calendar of the months and the dates of the months in regular order, in twelve horizontal, parallel rows with slots between the rows, and with an arrangement of the days of the week in regular order, occurring and reoccurring, in twelve, horizontal, parallel rows, on the inner chart, and with an arrangement of all the years in the twentieth century in the embraces of brackets on the inner chart, with the arrangement on the inner chart herein set forth in such relation and position of its parts to each other, and in such relation and position to the calendar on the outer chart and to two indicating ar-

rows on the outer chart, one for common years and one for leap years, so that when the point of the indicating arrow is placed to the point of the bracket embracing the year for which the calendar is sought, which is done by sliding or sliding and revolving the inner chart to such position, the calendar for the year sought will invariably be formed by the names of the days of the weeks on the inner chart appearing in the slots on the outer chart directly over the dates on the outer chart, the two charts combined forming the calendar.

In testimony whereof we affix our signatures in presence of two witnesses.

ALLEN VAN RENSSELAER.
FRED H. TENNEY.

Witnesses:

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W. R. SAMPSON.