(Model.)

2 Sheets—Sheet 1.

C. TREGONING.

COMBINATION LOCK.

No. 294,290. Patented Feb. 26, 1884.

Fig. 1.

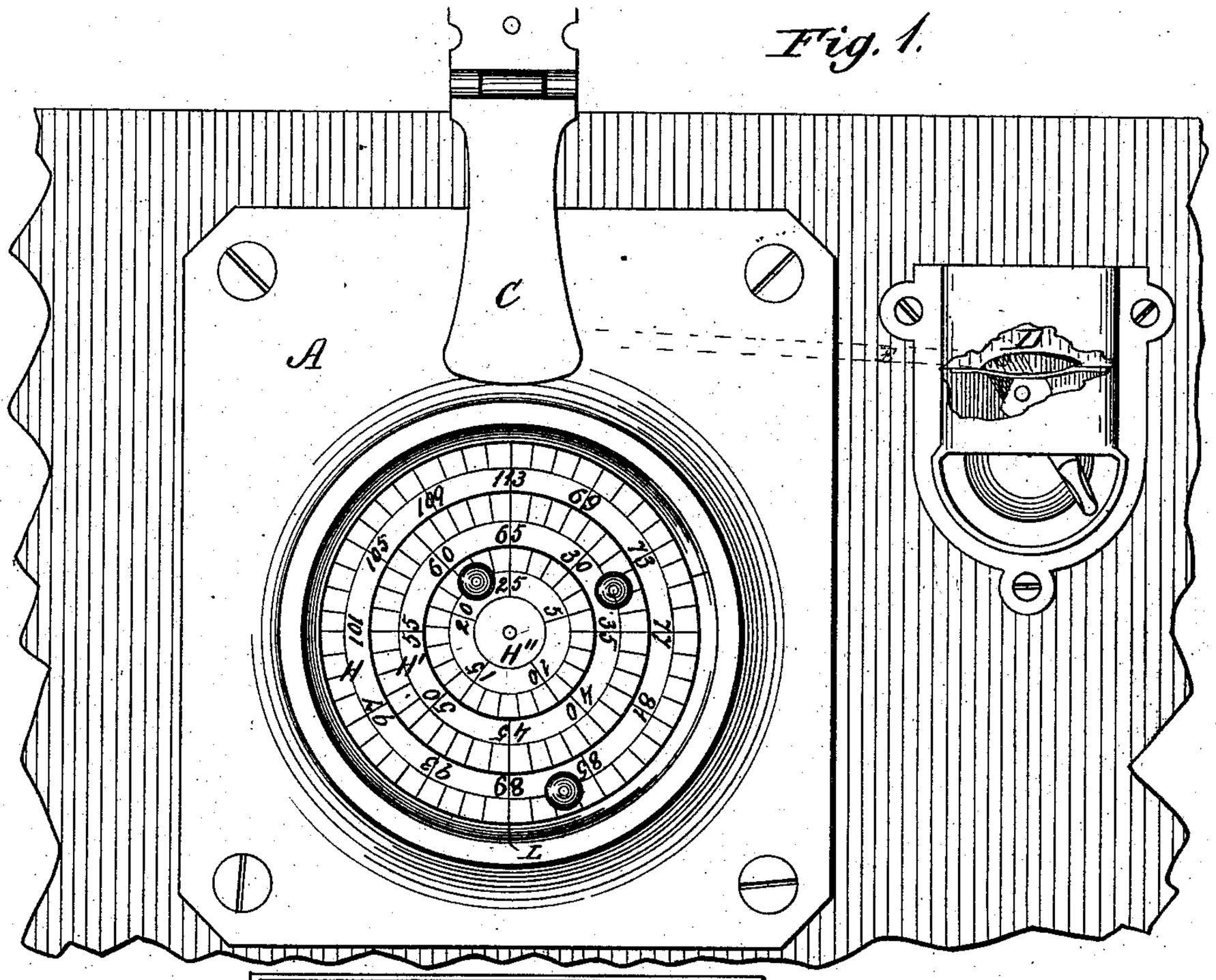
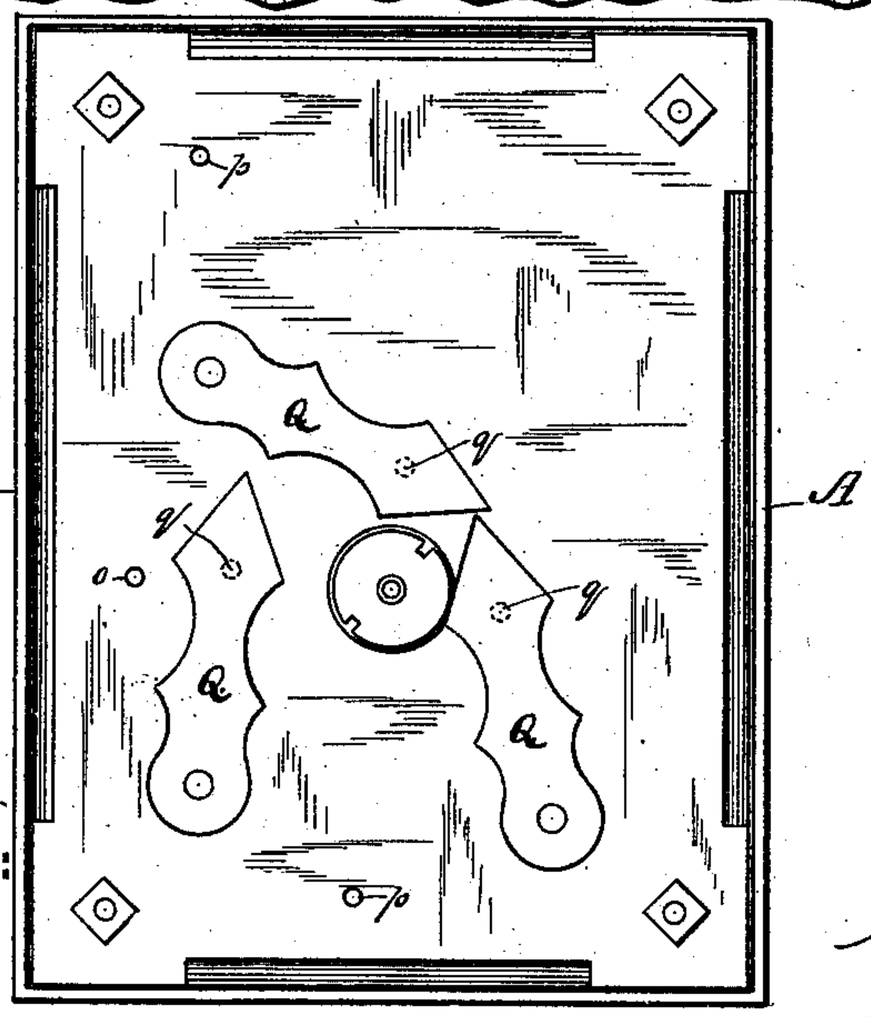


Fig. 2.



WITNESSES:

W. W. Hollingsworth

W. K. Stevens.

INVENTOR:

C. Tregoning

BY Munn & Co

ATTORNEYS.

(Model.) 2 Sheets—Sheet 2.

C. TREGONING.

COMBINATION LOCK.

No. 294,290. Patented Feb. 26, 1884.

Fig. 3.

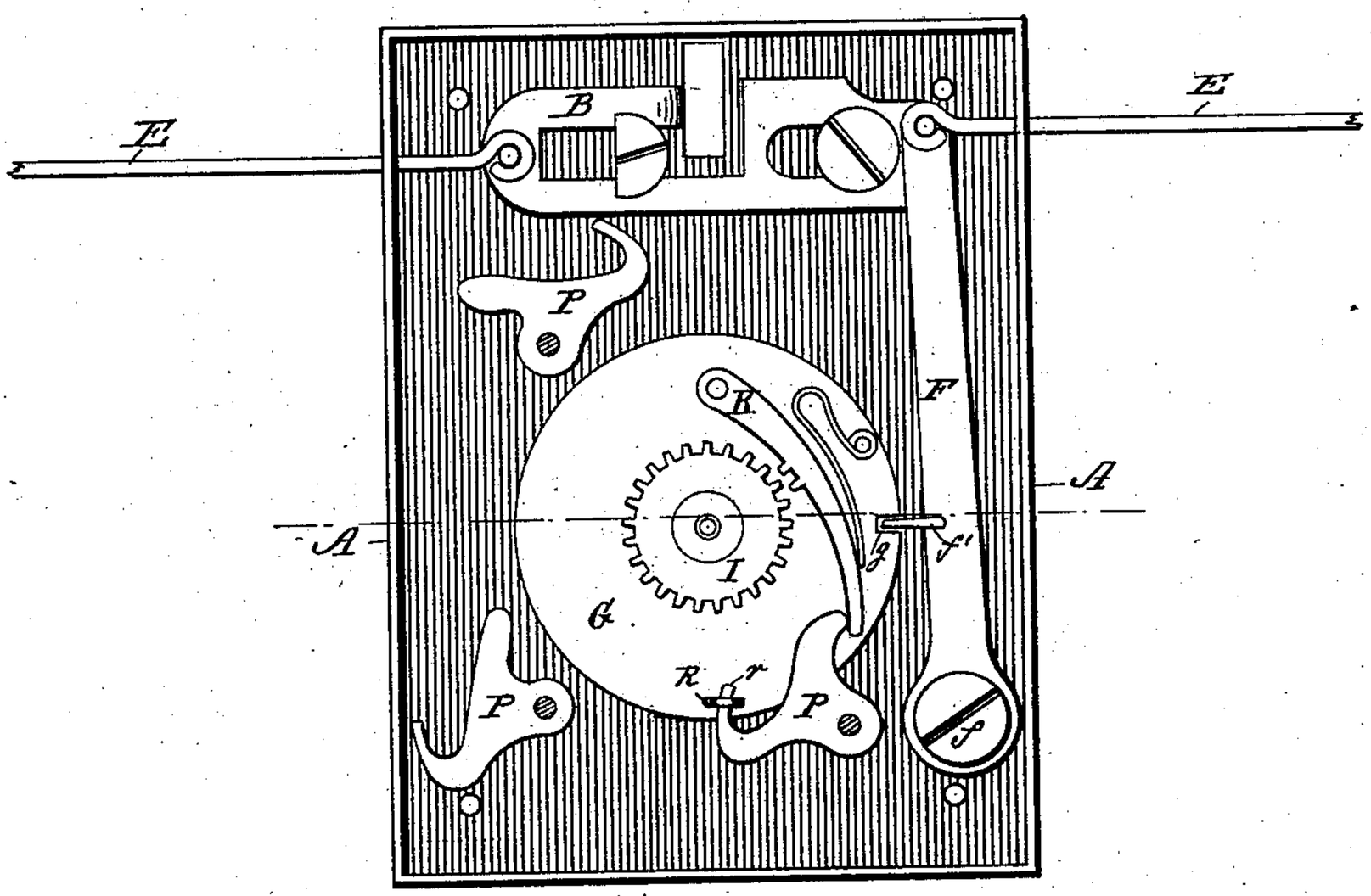
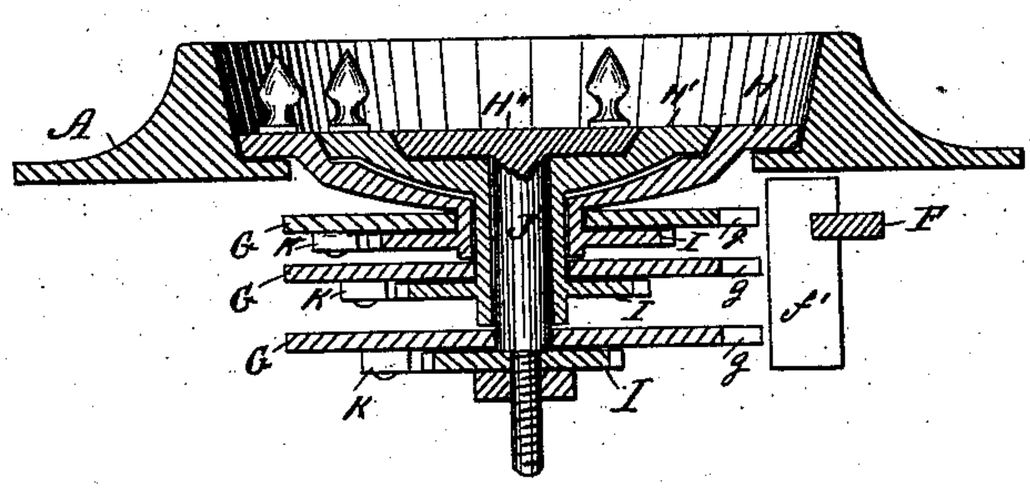


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES TREGONING, OF LEAD CITY, DAKOTA TERRITORY.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 294,290, dated February 26, 1884.

Application filed September 18, 1883. (Model.)

To all whom it may concern:

Be it known that I, CHARLES TREGONING, a citizen of the United States, residing at Lead City, in the county of Lawrence and Territory of Dakota, have invented a new and useful Improvement in Combination-Locks, of which the following is a specification.

This invention relates to that class of combination-locks in which one or more dials or sets of indices of some kind are adapted to be set in variable relations to control the sliding of the bolt. Its object is to provide a lock which may be operated without a key, and which may be adapted in form and size for use on trunks, doors, drawers, safes, &c., and which may be changed to operate under different indices.

The invention consists in one or more concealed notched disks, each connected with a visible index, means for changing the relation of said disks to their indices, means for drawing the bolt, and means for preventing the bolt from being drawn in certain relation to the index, as hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a front view of my lock in a form suitable for trunks. Fig. 2 is a rear view of the same. Fig. 3 is a rear view of the interior, and Fig. 4 is a horizontal section at *x* of Fig. 1.

A represents the case of the lock, made in form to conceal all the parts shown in Fig. 3.

B is the bolt, adapted to slide through the hasp C, and to be connected with one or more pull-latches, D. Each of these latches is provided with a spring, which resists motion in either direction, yet permits the same to be moved by a little force to either draw or push the bolt. The bolt is pushed to lock the hasp and drawn to unlock it.

The latches D may be located at any distance from the lock, and be connected with the bolt by means of rods or wires E. The bolt is also connected with a lever, F, which is pivoted at *f* to swing when the bolt slides, and provided with a blade, *f'*, adapted to engage a notch, *g*, in each of the disks G when the same registers therewith. When the notches of all the disks register with the blade *f'*, the bolt may be drawn, the blade entering the notches; but when the notch of either disk is turned away from the blade it will rest against the periphery of that disk and prevent the bolt being drawn. Of course when two or more disks are out of registry there is still further opposition to the withdrawal of the bolt, for all of the notches must be brought to register with the blade before the bolt can be withdrawn.

I have here shown three disks; but locks may be made according to my invention having one or more disks. The disks being concealed, each one has a dial, H, by which it is visibly represented. Each dial has a separate scale and figures or other indices of its own. The smallest dial, H″, is rigidly fixed upon a central spindle, J, having a toothed wheel, I, also rigidly fixed thereon. To produce the best result, the number of teeth of said wheel should correspond to the divisions on the dial. One of the disks, G, is journaled to revolve freely on said spindle J, and is provided with a spring-pawl, K, adapted to engage the teeth of wheel I to lock said disk to said wheel, so as to be revolved with its dial H″. By disengaging pawl K from wheel I, its dial may be rotated relative thereto. Thus, suppose blade *f'* engaged with the disk G and the pawl K disengaged, then the dial H″ may be rotated so that any number thereon, arbitrarily selected, may be brought opposite any fixed point, as L. Then the pawl, engaging the wheel, will fix the relation between the disk and its dial, so that whenever that same figure of the dial is brought opposite the given point L, the notch of this disk will register with the blade *f'* and permit the bolt to be drawn. Each disk G is connected in the same manner with a dial, the second disk being journaled on one end of a sleeve or hollow shaft around the central spindle, and adjustably connected therewith by means of a toothed wheel and pawl, similar to I and K. The next disk and the largest dial H are similarly connected, and I may use any number of disks and dials in the same manner; but as three dials with one hundred gradations thereon admit of over a million changes, so that a person might make over one million systematic trials before hit-

ting the combination that would open the lock, more than three dials would seem useless. The dials may be set to register some different number of each one with a given line on the frame or with different lines thereon; or the large dial may be so set and the next inner one set with some number on it to register with some number on the outer one.

To unlock the hasp, set all the dials according to the combination fixed, then draw the bolt. To change the combination, it is necessary that all the disks be locked from turning by unlocking the hasp and leaving blade *f'* in the disk-notches. Then the pawls K are raised one at a time, and each disk so liberated is turned to any desired index, then secured by allowing the pawl to engage the toothed wheel again. To raise the pawls, I adapt arms P to swing around and hook under them, and I operate each of these arms by means of an exterior handle, Q, which is provided with a stud-pin, *q*, adapted to spring into stop-holes *o p* at either end of its sweep. When the handle Q rests at stop *o*, the arm P is out of the path of the pawl, leaving it free to revolve with the disk. When the disk is locked by blade *f'* and the handle Q is carried around to stop *p*, the pawl is engaged and raised by arm P.

To prevent the disk being rotated in case the bolt should be pushed while setting the combination, I provide a hooked end, *r*, on the arm P, adapted to engage a staple, R, on the disk. This hooked end is practically in the arc of a circle from the center of oscillation of arm P, so that it may engage or disengage the staple R without causing the disk to rotate.

The dials may be each provided with a knob by which to turn it. In case the combination is lost, unscrew the back of the lock, take it off, and bring the notches of all the disks to the blade, and draw the bolt. Now reset the combination, as desired. Should the combination be lost when the trunk is closed and locked, there is no means to get in except to work out the combination or break in.

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

1. The combination, with the sliding bolt of a lock, of one or more levers or latches, D, a spring engaging the same to retain it at either end of its arc of motion, and a wire or other means for connecting said latch with said bolt, substantially as specified, whereby the latch may slide the bolt.

2. A spindle, a toothed wheel fixed thereon, a disk adjustably secured on the same, and a spring-pawl on the disk, arranged to engage said toothed wheel, in combination with an arm pivoted in the frame to be set into or out of the path of said pawl, substantially as and for the purpose specified.

3. The disk G, the pawl K, pivoted thereon, and the staple R, secured thereto, in combination with the arm P, having the hook *r*, pivoted to the lock-case, as shown and described.

4. The disk G, the pawl K thereon, and the arm P, journaled to the frame to engage said pawl, in combination with a handle, Q, attached to said arm, a stud in said handle, and the lock-plate provided with notches to receive said stud, as shown and described.

CHARLES TREGONING.

Witnesses:
W. R. DICKINSON,
H. W. PINNEO.