

S. & J. D. COPE.

Bee Preserver.

No. 3,439.

Patented Feb. 12, 1844.

Fig. 1.

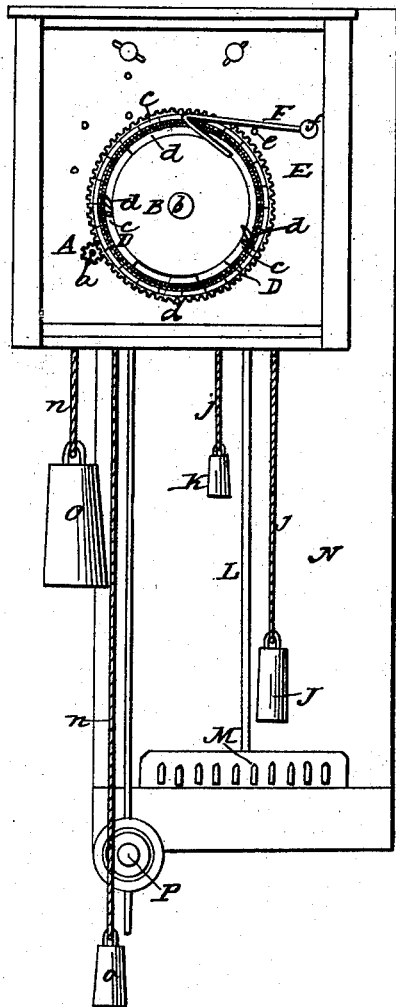


Fig. 2.

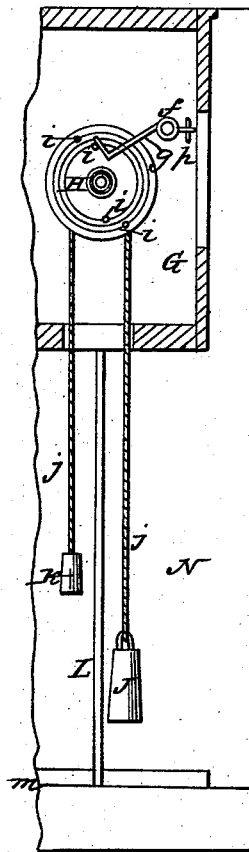
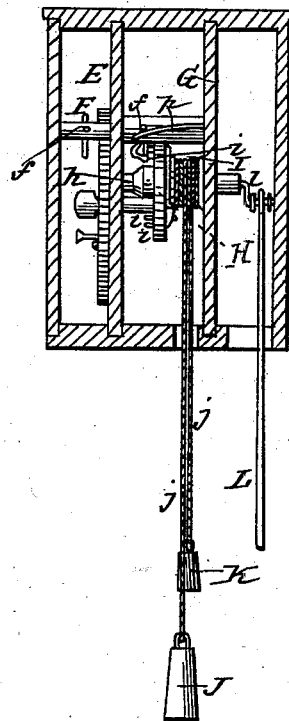


Fig. 3.



# UNITED STATES PATENT OFFICE.

S. COPE AND J. D. COPE, OF DAMASCOVILLE, OHIO.

## IMPROVEMENT IN BEE-HIVES.

Specification forming part of Letters Patent No. 3,439, dated February 12, 1844.

### *To all whom it may concern:*

Be it known that we, S. COPE and J. D. COPE, both of Damascoville, in the county of Columbiana and State of Ohio, have invented a new and useful apparatus for opening and closing bee-hives at any stated time during the day or night, which we call the "Bee-Preserver;" and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front elevation of the apparatus; Fig. 2, another front elevation, the partition E being removed; and Fig. 3 is a transverse vertical section.

On the front end or extremity of the arbor or shaft *a* of the great wheel of a common clock the pinion A, having eight leaves or cogs, is fastened. This pinion carries the large face-wheel B, which moves on its own independent arbor *b*. Said face-wheel B is furnished with ninety-six cogs, into which the cogs of the pinion A mesh, causing it to revolve once to every twelve revolutions of the said pinion.

On the face and near the circumference of the face-wheel B twenty-four or twice twelve divisions are marked—*id est*, from 1 to 12—and repeated, indicating the twenty-four hours of day and night. These divisions are subdivided into minutes, and, if desired, these are again subdivided into seconds, provided the space admits of it. These said divisions constitute the stationary index-plate C. (See Fig. 1.)

Immediately within and contiguous to the stationary index-plate is a circular groove, *d*, in which the two segmental movable index-plates D slide. These latter index-plates are furnished each with a point or index, *e*, and also an adjusting-screw, *d*, each, for the purpose hereinafter set forth in the description of the operation. Near the circumference of the face-wheel, at about an angle of forty-five degrees from its center, and at its right side, the pin *e* is fastened into the partition E, protruding in such a manner as to support the bent wire F, next described. This wire is inserted and fastened to the shaft *f*, and at a right angle with its axis, extending, after leaving the shaft, in a slightly-inclined (nearly horizontal) direc-

tion, as far as the vertical diameter of the face-wheel B, then changing its direction by returning downward at an angle of about thirty-five degrees with its horizontal branch.

The shaft *f*, after passing through the partition E, enlarges and then enters the partition G for a bearing. At about one-third of the length of its enlargement, immediately back of the partition E, another wire, *g*, is fastened to the said shaft, extending, first, at right angles with the axis of the shaft in the same direction as the wire F, but tending downward at an angle of about thirty degrees with the horizon, then taking a short right-angular turn toward the wheel H, and finally taking again an upward-tending direction, all as shown in Figs. 2 and 3.

Next there is the wheel H, which is fastened to its own arbor *h*, the extremities of which rest and move in the partitions E and G. This wheel has on its face and near its circumference four projecting pins, *i*, placed as shown in Figs. 3 and 2, and the object of which will be described hereinafter. Back of this wheel, and on the same shaft, is the drum I, around which the cords *j* wind, to the ends of which the weight J and counter-weight K are fastened. Furthermore, the wheel H is furnished on its back with the common click-and-ratchet work for the winding up of the weight J. The back extremity of the arbor *h* of the wheel H, extending beyond the partition G, is furnished with a small crank, *l*, to which is attached the rod L, the lower extremity of which connects with the gate M, which closes the aperture *m*, which forms the entrance to the hive.

N represents the front of a bee hive or palace; *n*, O, *o*, and P, the common appendages of a clock—viz., cords, weight, counter-weight, and pendulum.

Operation: The adjusting-screws *d* having been loosened, the segmental movable index-plates D are moved in the circular groove *d* until the points or indices *e* point to the respective hours of morning and evening at which it is desired to open or close the hive. This being done the index-plates are fastened again by means of said adjusting-screws. Next, the clock and the apparatus are wound up by means of their respective counter-weights O and J. Then the pendulum is put in motion, and thus the clock set going. The pinion A, in conse-

quence of being fastened to the shaft *a* of the great wheel of a common clock, revolves once in every two hours, and having eight leaves or cogs, which mesh into the ninety-six cogs of the large face-wheel B, causes the latter to revolve once every twenty-four hours. The face-wheel thus revolving will cause the adjusting-screws, which project sufficiently for that purpose, to come alternately at the appointed hours in contact with the bent wire F, either opening or closing (as the case may be) the gate M in the following manner: The adjusting-screw acting at the time, in course of its revolution with the face-wheel, to which it is fastened, touches the wire F on the under side of its downward branch, slides along it, raises it gradually, and thus causes the shaft *f* to turn. The turning of this shaft raises the wire *g* sufficiently to allow the pin *i*, which has thus long rested or leaned against the upward-tending branch of said wire, to escape in consequence of the weight K, by means of its cord *j*, causing the drum I to revolve, which carries with it the wheel H, being on the same shaft. The adjusting-screw having traversed the downward branch of the wire F, lets it fall again on its resting-pin *e*, causing a retrograding motion in the shaft *f*, and consequently of the

wire *g*, which causes the latter to oppose the passage of the next-coming pin, *i*, which remains stationary until the next-coming adjusting-screw raises the wire F again, and so on. This motion is assisted by the wire spring *p*, which protrudes from the partition G, and bears on the under side of the bent wire *g*. The shaft *h* turning, carries with it the crank *l*, to which the rod L of the gate M is attached, raising and closing the latter when in an upward-tending vertical position, or lowering and opening it when in a downward position, as the case may be.

By having branch rods any number of gates may be operated upon by the same apparatus.

What we claim as our invention, and desire to secure by Letters Patent, is—

The large wheel B and the wheel H, in connection with a common clock-work or any time-keeping apparatus, combined with the gate M, for the purpose above described, the whole being constructed and operated substantially as hereinabove set forth.

SAMUEL COPE.

J. D. COPE.

Witnesses:

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