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JOHN H. COOPER. Mechanical Movement.

No. 119,576. Patented Oct. 3, 1871.

FIG. 1.

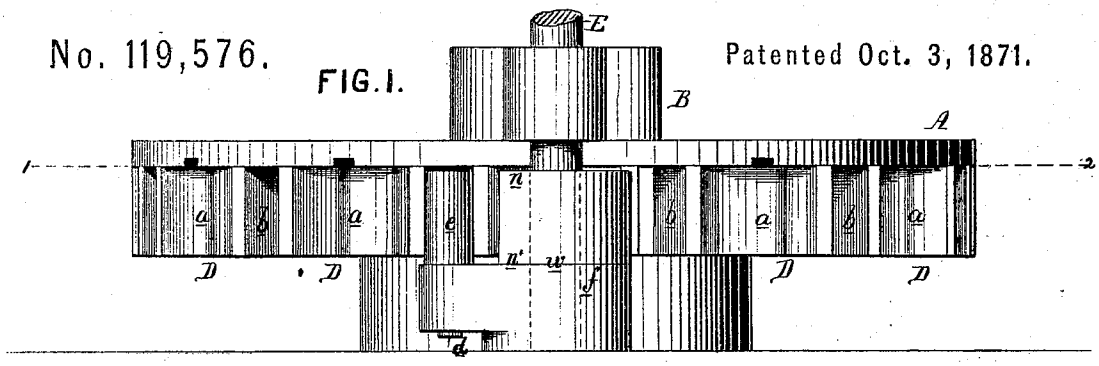


FIG. 2.

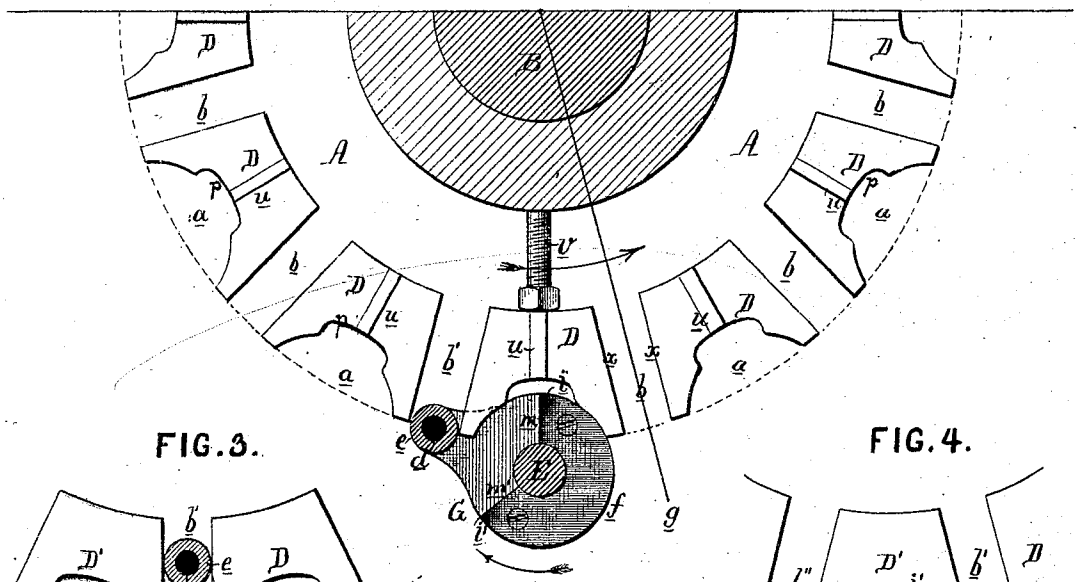


FIG. 3.

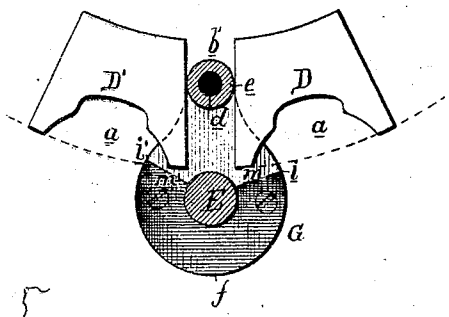


FIG. 4.

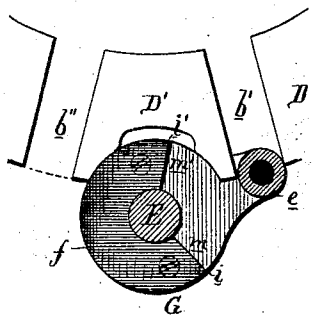
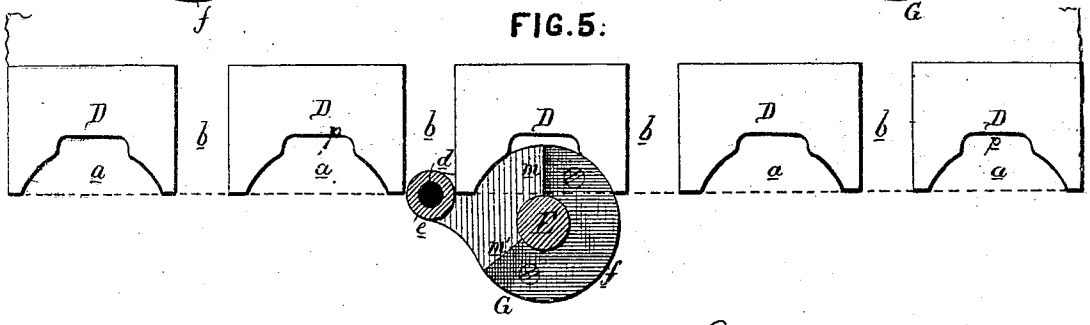


FIG. 5.



WITNESSES { Jno. B. Harding. Thos. McElwain

John H. Cooper by his attys Howson and Sons

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UNITED STATES PATENT OFFICE.

JOHN H. COOPER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. 119,576, dated October 3, 1871.

To all whom it may concern:

Be it known that I, JOHN H. COOPER, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented a Mechanical Movement, of which the following is a specification:

My invention consists of a device, too fully described hereafter to need preliminary description, for converting a uniform rotary motion into intermittent movements, during the intervals between which the object operated on is locked.

Figure 1 is an edge view of a device illustrating my mechanical movement; Fig. 2, a sectional plan view of half of the device on the line 1 2, Fig. 1; Figs. 3 and 4, detached views illustrating the operation of my invention; and Fig. 5, a diagram illustrating a modification of my invention.

In Figs. 1 and 2, A represents a wheel or disk arranged to turn on a shaft, B, and to the under side of this disk is attached a series of blocks, D, all alike in shape, and arranged in a circle concentric with the disk, and at equal distances apart from each other, the blocks being so formed that there shall be between them spaces *b*, each space having opposite parallel sides *x x*, (Fig. 2,) which are also parallel with a radial line, *g*, drawn from the center of the disk midway between the said sides *x x*. E is the driving-shaft, to which is secured an arm, G, having near its outer end a pin, *d*, carrying a cylindrical roller, *e*, which is of such a diameter as to fit snugly in but pass freely through any of the spaces *b*, in the manner described hereafter. The hub *f* of the arm G is of the peculiar segmental form illustrated in the drawing, being cut away on the radial lines *m m'*, Fig. 2; and from the upper end *n*, Fig. 1, of the hub to the line *n'*, the periphery of this segmental hub is adapted to a segmental recess, *a*, formed in each of the blocks, and each recess is cut away at *p* for a purpose rendered apparent hereafter. The arm G is supposed to be turning continuously in the direction of the arrows; and, as seen in Fig. 2, the roller of the arm is on the point of entering the space *b'*; on the further turning of the arm the disk A must necessarily be turned in the direction of its arrow, the corner *i* of the segmental hub *f* at the same time receding so as to offer no impediment to the free turning of the disk. By the time the arm G has reached the position shown in Fig. 3 the disk will have completed one-half of one movement, and the corner *i* of the segmental hub will be entirely free from the recess *a* of the block D, while the corner *i'* is approaching the recess of the block D'. As the movement of the arm continues the disk A will continue to turn in the direction of the arrow, the segmental hub gradually taking its place within the recess *a* of the block D', until the arm arrives at the position shown in Fig. 4, when its roller *e* is about to leave the space *b'*, after which it can have no further control of the disk, which is locked by the segmental hub, owing to a portion of the latter fitting the recess *a* of the block D'; and the hub, as the arm continues to turn, will continue to retain and lock the disk until its roller *e* enters the next space b^2, Fig. 4, when the disk, freed from the control of the hub, will commence a second movement. It will be seen that the disk is controlled in its movements by the roller of the arm G, and that the locking of the disk is effected by the segmental hub, the several parts being so accurately arranged in respect to each other that the disk is never free from the control of the hub until the roller is in a position to turn the disk; in other words, as the arm G revolves the disk is either being moved by the roller of the arm or is locked by the hub of the same. The recesses *p* in the recesses *a* of the blocks are necessary for permitting the corners *i* and *i'* of the hub to take the course pointed out in the said recesses *a*. Although the segmental portion of the hub may form a part of the arm, I prefer to make it separate, as shown by the line *w*, and to secure it to the arm by suitable bolts and screws, so that the said segmental portion can be adjusted at pleasure, or renewed when worn, to be replaced by a new segment.

The above-described movement is applicable to many machines, and under many circumstances but one example of its applicability will suffice to illustrate the importance of the invention. In molding soap, crude blocks of that material are placed in chambers of the proper size and configuration for imparting the desired form to the block, and the pressure on the latter is accomplished by means of a heavy falling plunger, which must enter and exactly coincide with the chambers. The chambers may be formed on the disk A, and be arranged radially on the same or a circle concentric with the axis of the disk, and one plunger may be raised and permitted to fall successively into every chamber containing the soap. It is of the greatest importance that the

disk should be immovably locked and in the proper position during the falling of the plunger, so that the latter may coincide with the chamber which it has to enter; it is also important that, as the plunger is elevated free from the chamber, the disk should be promptly and accurately moved to the desired extent for bringiug another chamber directly beneath the plunger. It will be evident that the above-described mechanical movements will meet all these requirements.

Fig. 5 illustrates my invention as applied to the transmitting of an intermittent movement in a straight line. In this case the blocks are secured to a horizontal guided slide or table, such, for instance, as that which carries the plate to be punched by a punching machine. On turning the arm G the slide will be moved determinate distances, at intervals between which the slide will be effectually locked by the segmental hub of the arm, so that there can be no movement of the slide during the action of the punch on the plate. Many other applications of this modification of my invention will readily suggest themselves to experienced mechanics. I prefer, in most cases, to so secure the blocks D that they can be adjusted on the disk, as in Fig. 2, for instance, where each block has a rib, *u*, adapted to a radial guiding groove in the disk, and each block can be adjusted by means of a screw, *v*, and secured after adjustment by any appropriate appliances. The roller at the end of the arm can be readily removed, and replaced with such a roller as may coincide with the spaces between the blocks, these spaces varying in width in accordance with the adjustment of the blocks. In many cases, however, the disk may be furnished with permanent blocks D.

I claim—

1. A mechanical movement, in which a disk or slide is adapted to an arm having a pin and segmental hub, substantially as described, so that by the uniform rotation of the arm definite intermittent movements are imparted to the disk or slide and the latter locked during the interval between the movements.

2. The blocks D, rendered adjustable, substantially in the manner described.

3. The arm G, having its segment detachable and adjustable, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN H. COOPER.

Witnesses:

JNO. B. HARDING,

JOHN K. RUPERTUS.

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