(No Model.) 2 Sheets—Sheet 1.

J. C. ECKARDT.

MECHANISM FOR TURNING CHRISTMAS TREES WITH MUSICAL ACCOMPANIMENT.

No. 453,110. Patented May 26, 1891.

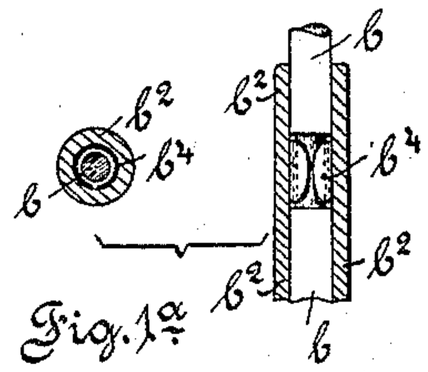

Fig. 1ª.

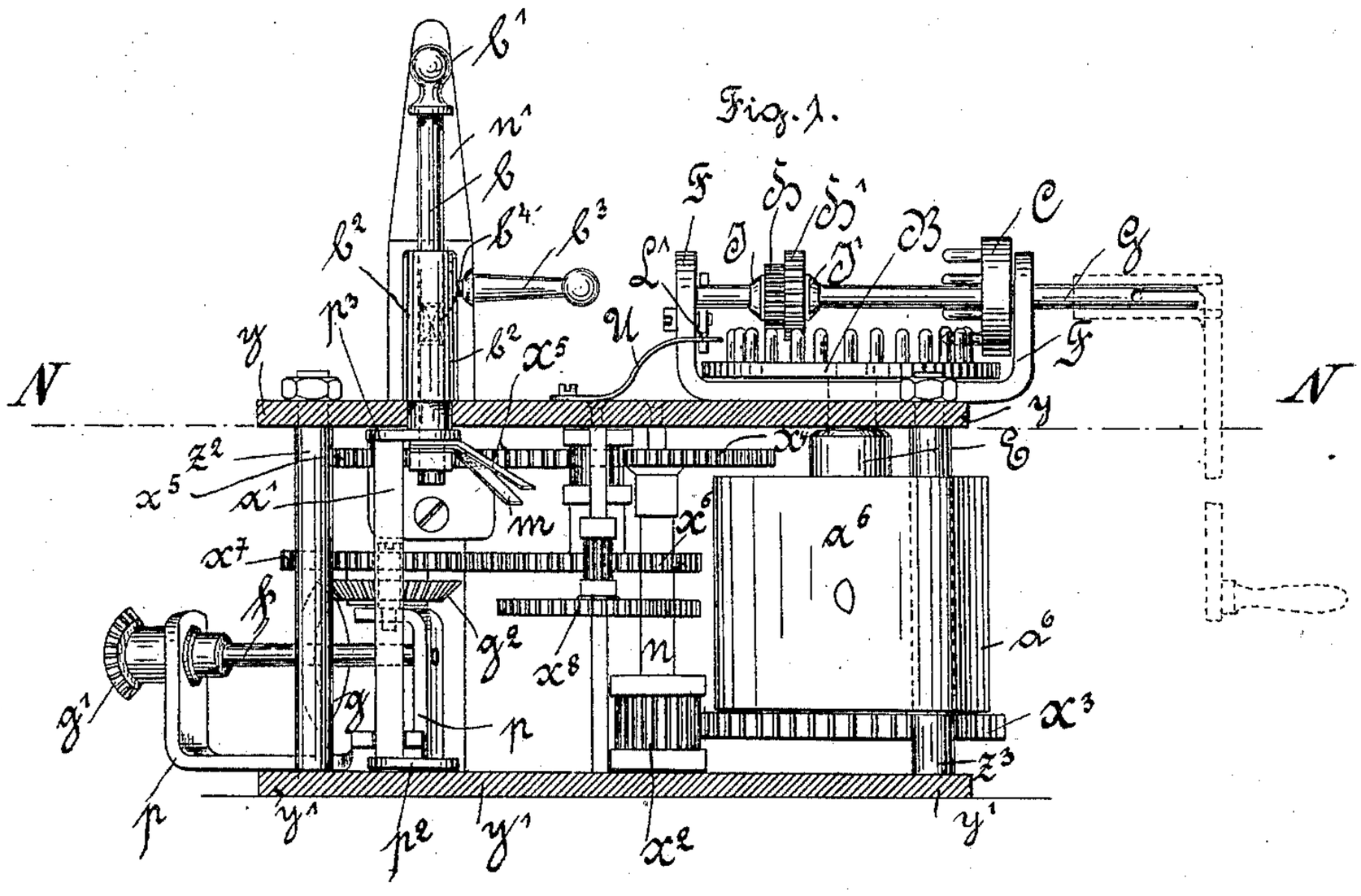

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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MECHANISM FOR TURNING CHRISTMAS TREES WITH MUSICAL ACCOMPANIMENT.

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Fig. 3.

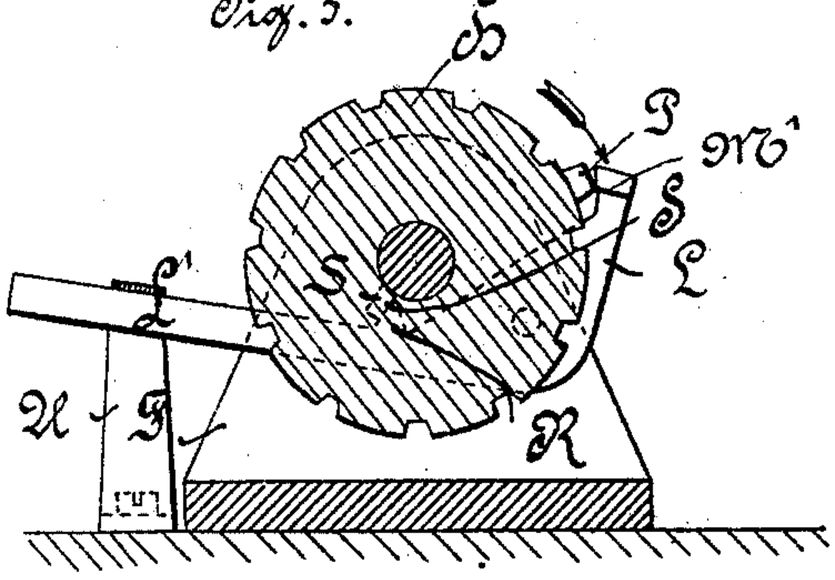


Fig. 2.

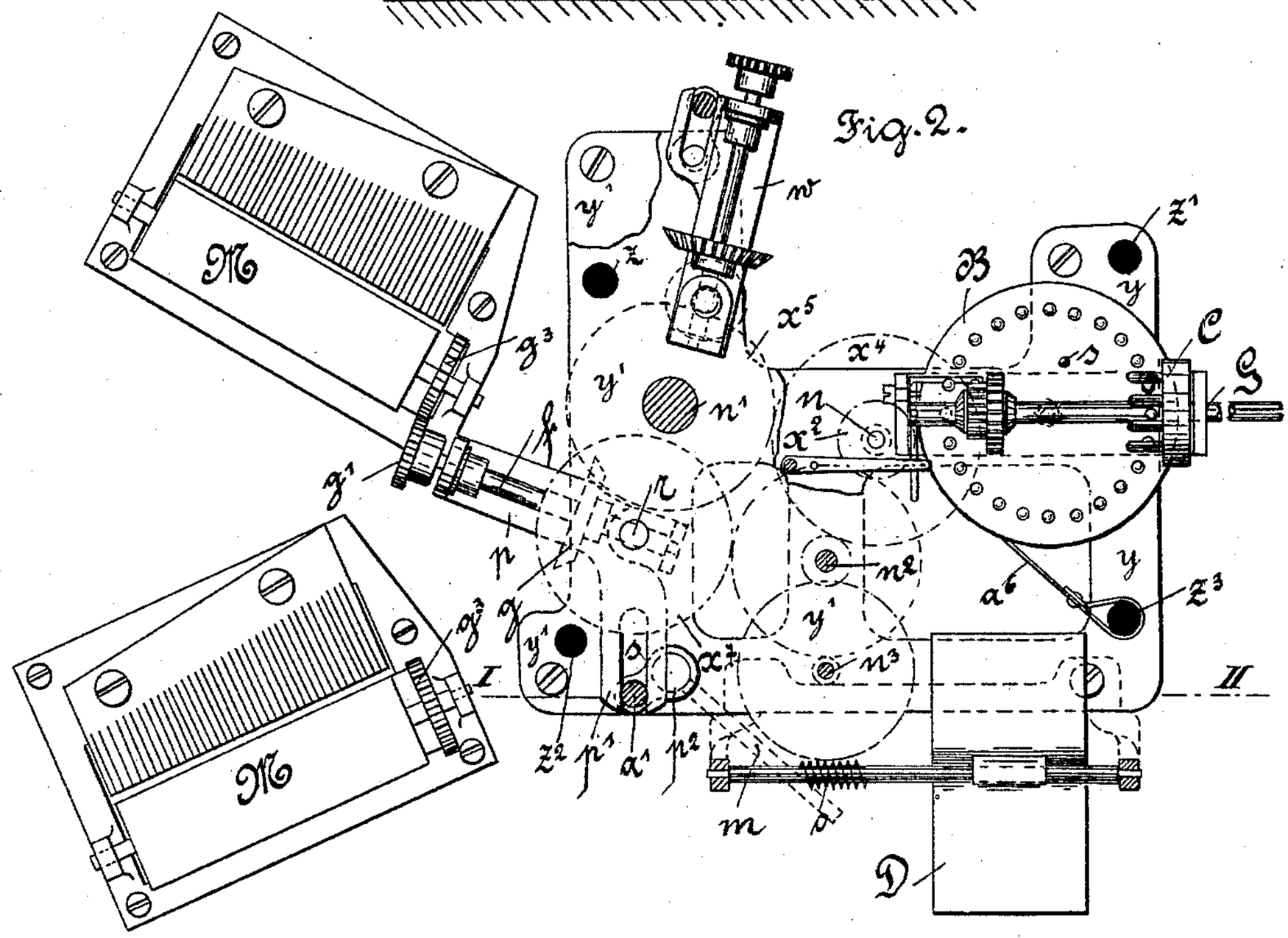
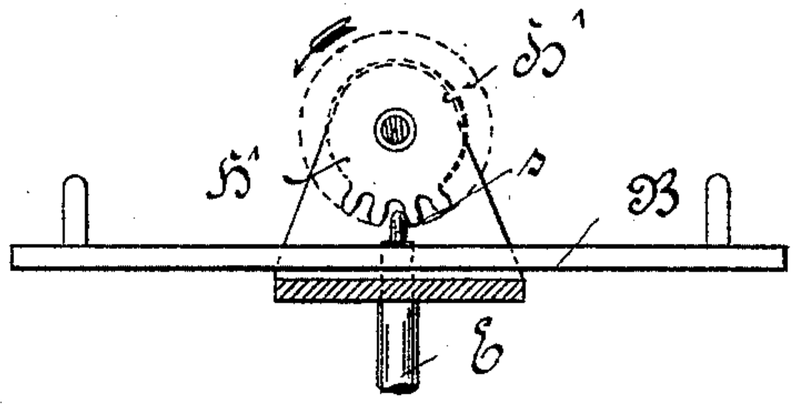


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHANNES CARL ECKARDT, OF STUTTGART, WÜRTEMBERG, GERMANY.

MECHANISM FOR TURNING CHRISTMAS-TREES WITH MUSICAL ACCOMPANIMENT.

SPECIFICATION forming part of Letters Patent No. 453,110, dated May 26, 1891.

Application filed December 10, 1890. Serial No. 374,252. (No model.) Patented in Germany July 22, 1884, No. 30,617, additional Patent March 26, 1889, No. 48,743, and in England March 29, 1889, No. 5,428.

To all whom it may concern:

Be it known that I, JOHANNES CARL ECKARDT, a subject of the King of Würtemberg, and a resident of Stuttgart, in the Kingdom of Würtemberg, German Empire, have invented certain new and useful Improvements in Mechanism for Turning Christmas-Trees with Musical Accompaniment, (for which I have obtained patents in Germany, No. 30,617, July 22, 1884, and Additional Patent No. 48,743, March 26, 1889, and in England, No. 5,428, March 29, 1889,) of which the following is a full, clear, and exact specification.

My invention relates to such mechanisms by means of which it is possible to turn a Christmas-tree or any other article—as, for instance, pyramids covered with various articles in shop-windows—with the accompaniment of music and it is the object of my invention to facilitate the winding up of the clock-work, to procure means for preventing the spring from being broken by excessive tension, and to turn a Christmas-tree or any other article while playing any melody at the same time. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view, the fan and musical clocks being removed. Fig. 2 is an upper view, the spike and releasing-handle being removed; and Figs. 1^a, 3, and 4 are details.

The top plate y and bottom plate y' are connected by four vertical columns z z' z^2 z^3, one of which z^3 serves at the same time for holding the outer extremity of the spring a^6. The inner end of said spring is secured to shaft E, to the under extremity of which is attached the main driving-wheel x^3. The upper end of said shaft extends upwardly through the top plate and through a strip of metal F, the two ends of which are bent rectangularly upward so as to form bearings for a shaft G, which is split at its free extremity to receive a handle. A large crown-wheel B is firmly secured to shaft E and gears with a small crown-wheel C, the latter being fastened on shaft G, which carries also two wheels H H′. Said wheels H H′ are firmly connected with each other, and the double wheel so formed sits loosely on shaft G, being prevented from any axial displacement by two disks I I′, fastened to the shaft. One of these wheels H′ is a cog-wheel with long teeth, and is influenced by a pin S sitting on the crown-wheel B, inside the teeth of the latter. The distance of pin S from the center of wheel B is chosen, so as to cause pin S to enter the clearings of wheel H′ and turn the latter a certain degree at every rotation of wheel B. The wheel H has short teeth, as shown in Fig. 3, and serves as well to prevent wheel H′ from being rotated by shaft G, when not meshing with pin S, as to prevent the spring a^6 from being wound up too much. This is effected as follows: A double-armed lever L L′, Fig. 3, is attached to the inner side of that leg of angle F which is opposite the wheel H. The arm L is rectangularly bent so as to form a long horizontal tooth or pawl M′. The other arm is pressed constantly down by means of a spring U, thus causing the pawl M′ to enter one of the clearings in the wheel H. Now, when winding the clock-work up, by turning-shaft G the crown-wheel B with its pin S is turned, and a movement of the wheels H H′ is effected every time when the pin S passes under and between the teeth of the wheel H′. At the beginning of each movement of the wheel H the pawl M′ lies in one of the clearings, and during the movement said wheel is turned so far as to bring the next clearing under the pawl M′. The pin S leaves the teeth of the wheel H′ then, and the latter is held fast by the pawl until another impulse by the pin S is exerted. One tooth of the wheel H bears another smaller tooth P, which of course is also turned, together with the wheel H. Now after having turned the handle several times the tooth P has gained such a position as to come in the way of pawl M′, and consequently when turning the handle the next time the pawl M′ is compelled to move over the tooth P. Owing to that movement, the arm L′ is raised considerably higher than usually, and a projection R, secured to that arm, is put in the way of the projection S′ secured to the shaft G, thus hindering at once any further rotation of that shaft—*i. e.*, any further tension of the spring a^6.

The method of winding the clock-work up

by means of crown-wheels placed rectangular to each other and differing widely in their diameters has many advantages. In the first place the winding up of the mechanism is considerably facilitated. Then when any of the teeth of either wheel gets broken off they may easily be replaced without necessitating entirely new wheels. Lastly, when the work stands in a position not easily accessible, which often happens in the case of Christmas-trees where it is not possible to get at the work without creeping under the tree, a lengthening-piece consisting of a piece of tube having pins passed diametrically through it at each end may be placed over the end of spindle G and the key or handle then placed over its other end. The spike n' on which the tree is placed revolves by the aid of the wheels x^2 x^4 x^5. The cog-wheel x^4 meshes with a trundle on axle n^2, Fig. 2, which conveys motion to the fan and to the music-works by a wheel x^6 on the same axle, said wheel moving another cog-wheel x^7, and a trundle on the shaft n^3, Figs. 1 and 2, which carries a worm-wheel x^8 for turning fan D by means of worm o. A cog-wheel x^7 sits on the shaft r, Fig. 2, having a conical wheel g^2, which gears with a conical wheel g, the axle of which is placed in the vertical parts of a double angle p, forming one arm of a double-armed lever p p'. The other arm p' of said lever has a slit s in which an axle a' may be moved to and fro. Said axle is secured to plate y' by link p^2, and to the under extremity of a hollow column b^2 by link p^3, the column adapted to be oscillated by arm b^3. An axle f, which bears the conical wheel g, extends through its outer bearing, carrying there a toothed wheel g'. Now by turning the column b^2 by means of the handle b^3, the axle a' causes the lever p p' to move in such a way that the toothed wheel g' is placed against and meshes with one of the toothed wheels g^3, which are mounted on the music-boxes M. Thus the rotation of the conical wheel g^2 on the shaft r may be conveyed to any of the music-boxes, causing the latter to play as long as the tree or the other article secured on the spike n' revolves.

By a slight modification in the arrangement of the wheels there may be not only two music-works employed, as shown in the drawings, but four, as indicated by the lever w in Fig. 2, the shaft of which is driven in this case by the wheel x^5, thus dispensing entirely with the great complicated and expensive music-boxes that play several melodies, which may be replaced now, as shown by my invention, by a number of very simple and cheap works, each of which plays one or two melodies.

Stopping the work or releasing it is effected by a rod b, having a knob b' at its upper extremity and a double flat spring at its under extremity. Said rod may be shoved up and down within the hollow column b^2, and a flat spring b^4 inserted in said column prevents the rod b from spontaneous displacement. Now by shoving the rod b down the double spring m grasps the screw o, thus causing it to stop and thus effecting either slower working of the work or perfect stopping.

As easily to be seen, the music-boxes may be changed while the tree revolves without necessitating any stoppage. In special cases, where the spring employed is but a short one, the wheel H may be provided with two or more teeth, in order to limit winding up the clock-work according to the tension the spring is able to stand.

By this simple and cheap safety device is completely replaced the well-known and most-expensive spring-adjusted device, the so-called "Maltese cross."

Having thus fully described the nature of this invention, what I desire to secure by Letters Patent of the United States is—

1. A mechanism for rotating Christmas-trees with musical accompaniment, consisting of a mainspring rotating by intermediate gearing the tree-spike as well as one or more musical works adapted to be played one after the other, said musical works being operated by horizontal shafts f, held in adjustable frames p p', and having toothed wheels for conveying the motion of the clock-work to said musical works, as described.

2. In a mechanism for rotating Christmas-trees and other articles, the combination of one or more adjustable frames p p', having horizontal shafts f, driven by intermediate bevel-wheels g g^2, with a corresponding number of vertical shafts a', adapted to be moved sidewise in slits in said frames p' for the purpose of connecting the latter with one or the other musical work, substantially as described.

3. In a mechanism for rotating Christmas-trees and other articles, the combination of shafts a', adapted to be moved sidewise and having a link p^2 p^3 at each extremity, with movable columns b^2, having each a handle b^3, one of said columns being hollow and holding a rod for stopping and releasing the work, said rod being under spring-pressure and having a double flat spring attached to its under extremity, substantially as described.

4. In a mechanism for rotating Christmas-trees and other articles, the combination of the crown-wheel B, mounted on the mainspring spindle E, and in a special frame F, secured to the top plate v, with a pinion C, and shaft G, the latter carrying a loose double wheel H H', intermittingly influenced by a pin S on the crown-wheel B, substantially as described.

5. In a mechanism for rotating Christmas-trees and other articles, the combination of the bevel-wheel H H' on the pinion-shaft G with a double-armed lever L L', having one arm L' bent, as pawl M', and the other under pressure, the latter carrying a projection R,

adapted to stop the movement of a rotating pin S′, secured to the pinion-shaft, one of said double wheels II II′ having one or more projections P on its teeth adapted to turn the lever and lift its projection, substantially as described.

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

JOHANNES CARL ECKARDT.

Witnesses:
CARL MÜLLER,
CASPAR GROMANN.