(No Model.)

M. BRADLEY.

COLOR DISK ROTATING MECHANISM.

No. 492,604. Patented Feb. 28, 1893.

Fig. 1.

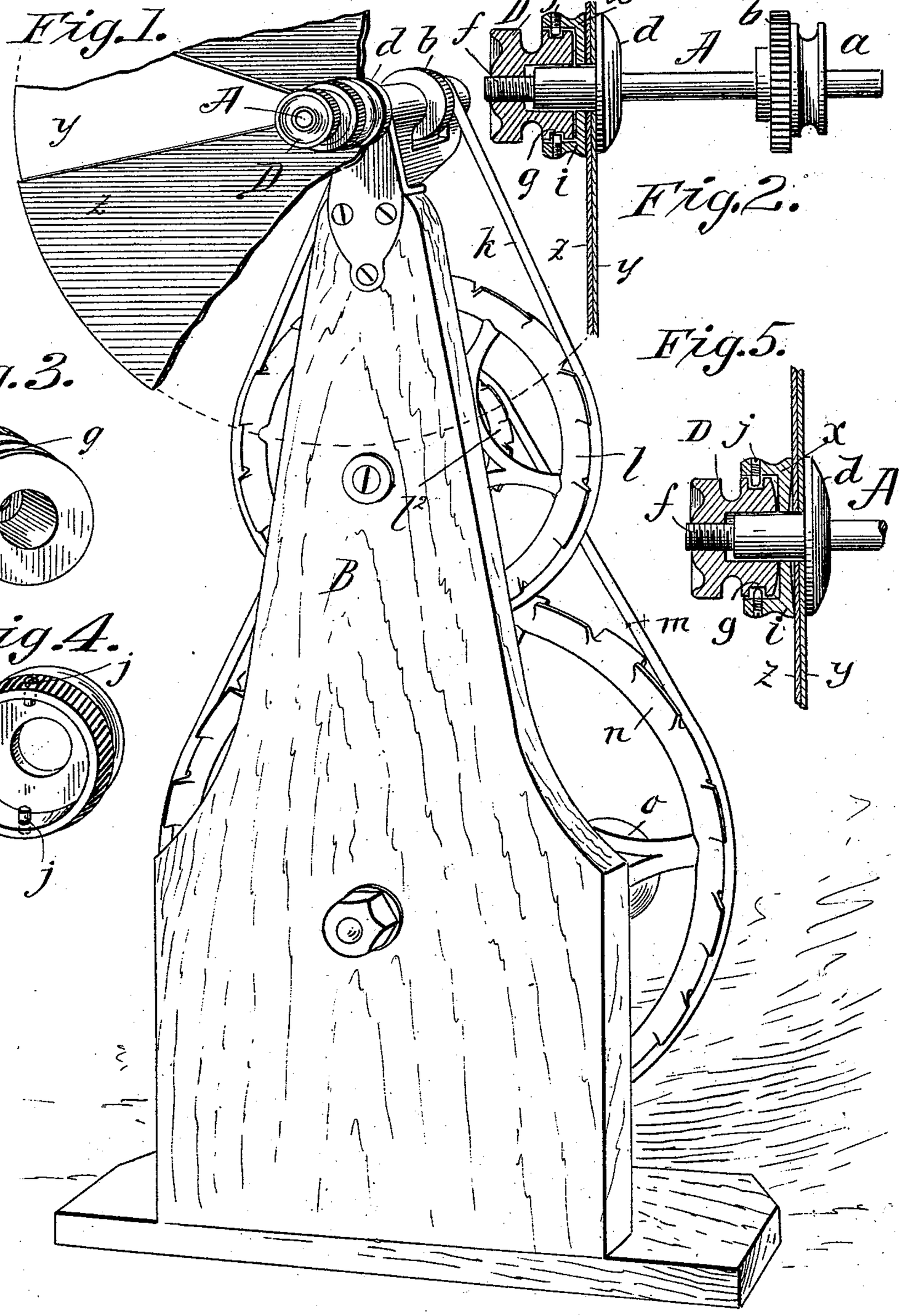

Fig. 2.

Fig. 3.

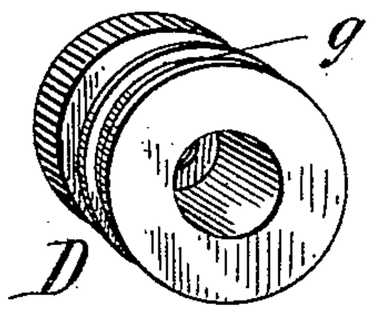

Fig. 4.

Fig. 5.

Witnesses:
J. D. Gaskill
K. L. Clemons.

Inventor:
Milton Bradley
per Schapins & Lea
attys.

UNITED STATES PATENT OFFICE.

MILTON BRADLEY, OF SPRINGFIELD, MASSACHUSETTS.

COLOR-DISK ROTATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 492,604, dated February 28, 1893.

Application filed April 25, 1892. Serial No. 430,473. (No model.)

To all whom it may concern:

Be it known that I, MILTON BRADLEY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Color-Disk Rotating Mechanisms, of which the following is a specification.

This invention relates to improvements in the well known rotating mechanism for color disks, wherein, as well known, different disks of standard colors, and black and white, are employed for combination and rotation to produce different color tints, shades, hues or modifications of the standard colors, each of said disks having a central aperture and a radial slit, so that two or more thereof may be mounted and clamped upon the rotatable spindle with as much of the one overlying the surface of the other as may be desired.

The purpose of this invention is to so improve the disk rotating mechanism that the liability of abrasion or rupture of the cardboard, of which the disks are constituted, bordering the central aperture may be avoided; and to this end the invention consists in the combination with the spindle of the rotating machine, of clamping devices constructed and connected or applied relative thereto, all substantially as will hereinafter fully appear and be set forth in the claims.

The invention is clearly illustrated in the drawings. Figure 1 being a perspective view of the disk rotating mechanism. Fig. 2 is a view of the spindle and section of a couple of the disks, and of the improved clamping devices. Figs. 3 and 4 are perspective views of parts of the clamping device shown as separated the one from the other. Fig. 5 is a view similar to Fig. 2, but showing, further than said view, points of constructions, which together with the purposes thereof, will be hereinafter noted.

The spindle, A, is mounted in suitable bearings at the top of the upright, B, and has the grooved pulley, *a*, fixed thereon and also the knurled disk, *b*. The spindle, toward its other end, has the shoulder, *d*, and the screw-threaded extremity, *f*.

D represents the clamping nut suitably internally screw-threaded for the engagement with the threaded extremity of the spindle, and has at its inner end portion the annular section, *x*, which is connected to move axially, as one with the nut, but otherwise so as to permit the nut to rotate independently thereof, or conversely, said section to rotate independently of the nut. A preferred detail formation of the parts for this capability consists in forming the peripheral groove, *g*, around the nut near its inner end, and the said section, *x*, with the forwardly extended annular flange, *i*, surrounding the grooved extremity of the nut, proper, and setting a screw or stud, *j*, (one or more) through the annular flange to loosely enter the groove. The spindle is rotated by means of the driving band, *k*, around the pulley, *a*, and around the larger pulley, *l*, which latter in turn is rotated by having a driving-band, *m*, around a smaller pulley, l^2, which is fixed to the pulley, *l*, and which band, *m*, is also around the large pulley, *n*, having the crank handle indicated at *o*. The rotations of the crank handle insure a largely multiplied number of rotations of the spindle and disks which are clamped thereon, said disks or sectors thereof being indicated by *y* and *z*. Now at the time it is desired to place two or more centrally apertured disks upon the spindle, the nut, *d*, and its supplemental section, *x*, are removed from the spindle and the disks, placed upon and around the latter, and against the shoulder, *d*, and the nut, and its supplemental section, are brought to the clamping engagement by giving the nut a rotational movement relative to the spindle, or vice versa.

The action and advantage of the usual manner of clamping the disks on the spindle by the exercise of the present improvements, are assured by grasping the nut in one hand, applying it, without rotation, against the threaded extremity of the spindle and by the other hand rotating the spindle by means of the crank-handle, or otherwise, when the nut will be drawn upon the end of the spindle and the section, *x*, thereof brought to a bind upon the portions of the disk surrounding the apertures thereof, and then said section, *x*, may rotate with the then clamped disks and spindle, while the nut, being still grasped, is having the last

fraction of its endwise and clamp tightening movement.

It has heretofore been quite destructive to the disks, after the inner end of the nut has come to a bind upon the disks to then further rotate the nut securing a movement thereof upon the disks to grind and wear them out, but by the provision of the devices set forth this deteriorating effect is avoided. Inasmuch as there may be liability of the belt slipping just before the complete clamping of the disks is effected as the crank handle is turned, it is found desirable at such latter portion of the operation, while retaining the grasp on the nut to impart the final portion of a turn to the spindle through means of the knurled thumb-disk, *b*. Of course, in lieu of holding the nut against rotation, and rotating the spindle, the same advantageous action will be derived by holding the shaft and turning the nut. By reference to Fig. 5 it will be observed that the face of the said section, *x*, which bears against the card board color disks is concaved permitting the entire force which is imparted to said section by the nut for the bind upon the disks to be transmitted to the disks directly at, and only by, said edge portions of the section, *x*, which circle of bearing is somewhat back from the border of the central disk aperture. It will also be seen in said view that the end face of the nut is convex to present but slight frictional surface on the section, *x*, all so that in the clamping on of the disks, immediately the section, *x*, comes to bind upon the proximate disk it will remain stationary relative to the disk, there being then the utmost freedom for the rotary movement of the section, *x*, relative to the nut, or vice versa, during the clamping operation.

I claim—

1. In a color disk rotating machine, the rotating spindle supported in suitable journal boxes, means for rotating said spindle, a shoulder on the spindle against which the perforated disk bears, and a clamping nut engaging a thread on the spindle outside the clamping disk from said shoulder, and an interposed ring, connected to the nut to move axially but not rotatively therewith, all combined substantially as described.

2. In a color disk rotating machine, the rotative spindle supported in suitable bearings and power gear for driving the same, a knurled disk on the spindle for engagement of the hand, a shoulder on the spindle and the perforated disk resting against said shoulder, and the set nut engaging a thread on the spindle outside said disk, having an interposed ring connected to the nut by pins entering an annular groove in the nut, all combined substantially as described.

3. The rotating shaft supported in suitable bearings and having a pulley thereon, a shoulder on said shaft and the disk sectors resting against said shoulder, the set nut having screw engagement with the shaft outside the sector, and a ring connected to said nut to partake of its longitudinal but not of its rotative movement, all combined substantially as described.

MILTON BRADLEY.

Witnesses:
H. A. CHAPIN,
WM. S. BELLOWS.