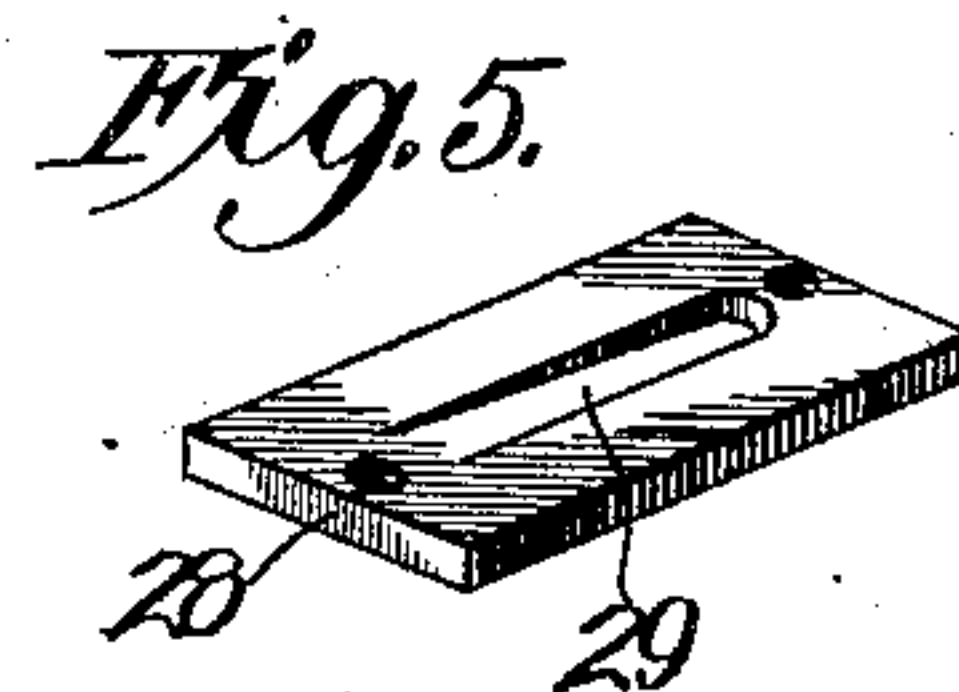
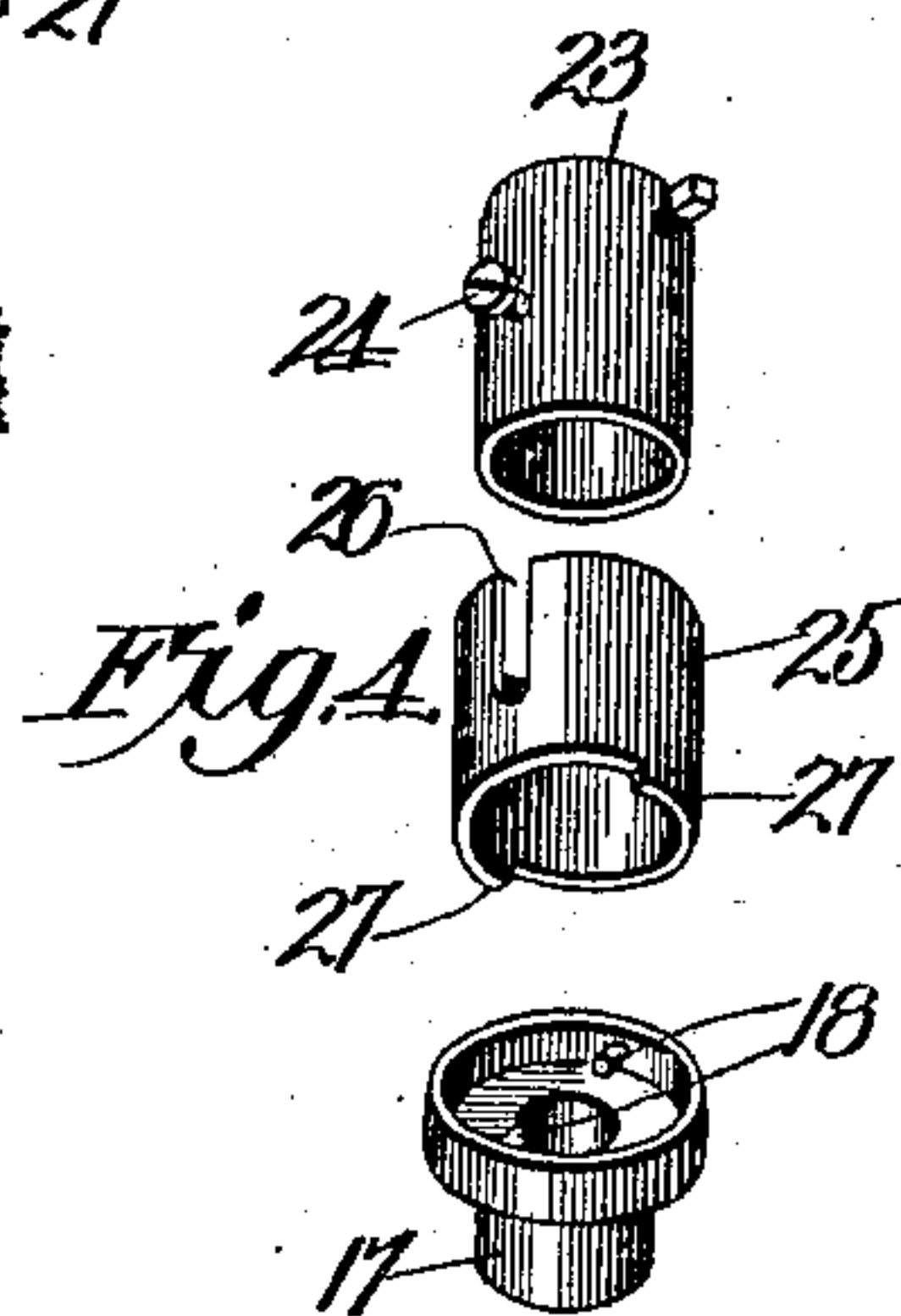
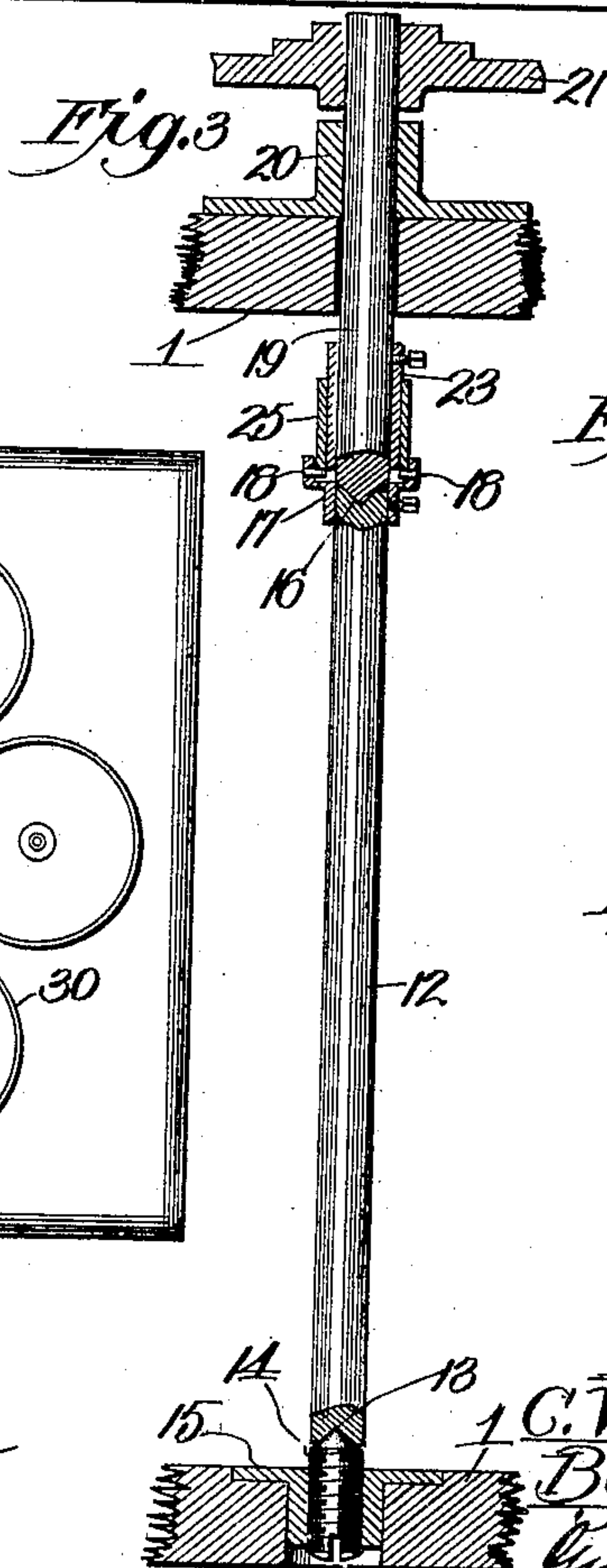
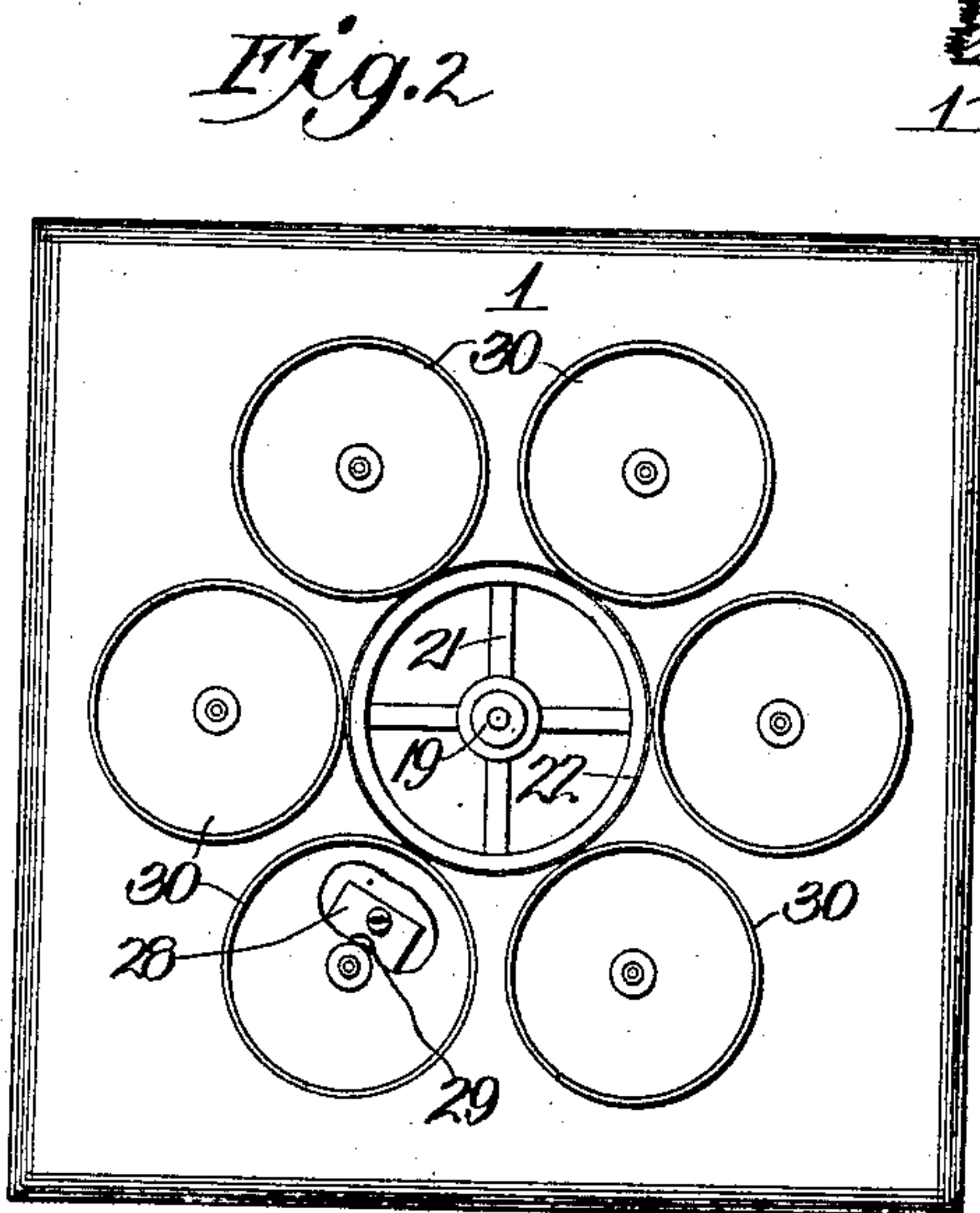
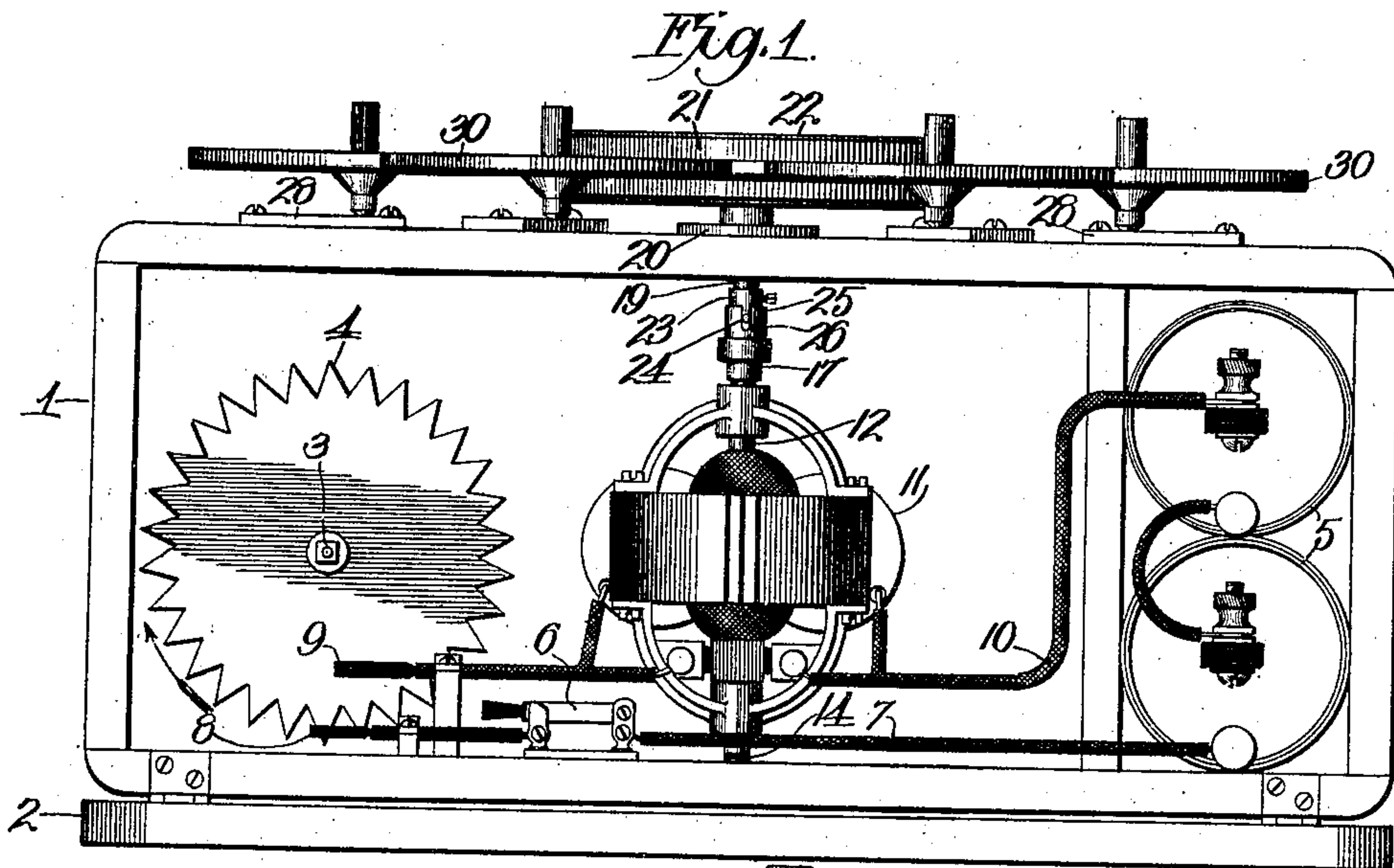


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MECHANICAL DEMONSTRATOR FOR COLOR CHANGING TOPS.
APPLICATION FILED AUG. 3, 1908.

917,260.

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MECHANICAL DEMONSTRATOR FOR COLOR-CHANGING TOPS.

No. 917,260.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed August 3, 1908. Serial No. 446,642.

To all whom it may concern:

Be it known that I, CHARLES V. CUNNINGHAM, a citizen of the United States, residing at Springfield, in the county of Greene and State of Missouri, have invented certain new and useful Improvements in Mechanical Demonstrators for Color-Changing Tops, of which the following is a specification.

This invention relates to a mechanical demonstrator for color-changing tops, and has for its object to produce a device of this character by which a plurality of color-changing tops can be continuously operated for any desired length of time.

A further object is to produce a device of this character by which the tops may be spun continuously for the desired length of time at small expense and without requiring the attention of an attendant.

A still further object is to produce a demonstrator of the character named of simple, strong, cheap, durable and compact construction.

With these general objects in view and others as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which,—

Figure 1, is a front view of the demonstrator with the front side or door open to disclose the internal construction and arrangement of the parts and equipped with a plurality of color-changing tops. Fig. 2, is a top plan view of the same on a reduced scale. Fig. 3, is an enlarged section of certain of the parts of the demonstrator taken centrally of the latter. Fig. 4, is a detail perspective view of the elements of the clutch connection between the drive shaft and the friction wheel shaft. Fig. 5, is a detail perspective view of one of the bearing plates for the tops.

In the said drawing, 1 indicates a box or casing provided at one side by preference, with a hinged door 2. Located within the box or casing is a shaft 3 adapted to be driven slowly by a clockwork or any other mechanism, not shown, and equipped with a toothed wheel 4, the teeth of said wheel forming in effect a plurality of minute hands for the shaft.

5 indicates a battery or other source of electric current supply, a dry battery being

preferable, which battery will preferably be arranged in the box as shown or in any other suitable manner.

6 indicates a switch forming a part of the electric wiring 7 between the battery and a suitably supported brush or contact 8, which brush or contact is adapted to be successively engaged by the teeth of the slowly rotating wheel 4. A second brush 9 forms the terminal of the other wire 10 of the battery and included in said wire electrically, is a motor 11 of any suitable type and supported in any suitable manner with its armature shaft 12 disposed vertically and centrally of the box by preference. The lower end of said shaft is preferably provided with a conical cavity 13 to receive the conical upper end of a set screw 14 mounted in a bearing 15 secured in the bottom of the box and accessible from the underside of the same to permit the armature shaft to be elevated slightly, if desirable or necessary.

The upper end of the armature shaft terminates in a conical cup-bearing 16 and secured upon the shaft around said cup-bearing and projecting above the same is a collar 17 diametrically enlarged at its upper end and provided at diametrically opposite points with pins 18 projecting radially inward of said enlargement.

19 is a vertical shaft extending loosely through the top of the casing and journaled in a bearing 20, secured thereto and provided at its upper end with a flywheel 21 preferably equipped with a leather or equivalent friction band or tread 22. The lower end of shaft 19 is cone-shaped and journaled in cup-bearing 16 and carries a collar 23, and projecting outward from said collar is a guide pin 24 for engagement with the vertical slot 26 in the upper end of a sleeve 25 fitting telescopically upon the lower end of collar 23 and within the enlargement of collar 17, the lower end of the sleeve being beveled or pitched so as to constitute a pair of diametrically opposite ratchet teeth 27, the beveled face of each tooth extending from its shoulder gradually toward the base of the abrupt face of the companion tooth. The said sleeve rests upon the pins 18 of the collar 17 and the relation is such that when the motor is started said pins bear against the vertical faces of the adjacent teeth of the sleeve and impart corresponding movement to the latter, which movement is in turn

transmitted by said sleeve to the fly wheel 21 through the engagement of slots 26 and pins 24.

In practice the motor is driven by preference, at regular intervals, determined of course by the speed of rotation of wheel 4 and the number of its teeth, that is to say, when one of the teeth of said wheel is in engagement with brush 8, the motor is positively driven at a high rate of speed and through the clutch mechanism described imparts corresponding speed to the fly wheel. As soon as the current is broken by the engaged tooth passing out of the range of brush 8, the speed of the motor quickly falls but the fly wheel continues to revolve at a hardly perceptible change of speed until the circuit is again completed and the motor gives such wheel a new impetus, these actions being repeated as long as the wheel 4 continues to revolve and the electric current supply is kept up.

As the speed of the motor falls each time the circuit is broken as above explained, the greater speed of the fly wheel causes the sleeve 25 to ride over the pins 18, said sleeve of course sliding upward and downward on the collar 23 and its guide pin 24. It will thus be seen that no vertical movement is imparted to shaft 19 or the fly wheel and because of the light weight of the sleeve 25, the same can be lifted by the pins 18 as it rotates, without imposing any material amount of friction on shaft 19 to retard the speed of the same.

Secured upon the top of the casing around the fly wheel are a plurality of bearing plates 28, the same being equi-spaced by preference around the wheel and provided with radial channels 29 pitched downwardly and inwardly at a slight angle toward the fly wheel to provide guide bearings for the reception of the points of spinning tops 30 of the color-changing type, the tops being preferably of that type covered by my Patent #845529, issued Feb. 26, 1907.

After the fly wheel is started, the tops are successively arranged upright with their points in the guide channels of the bearing plates 28, rotation being imparted to the top the instant its periphery comes into engagement with the periphery of the fly-wheel and it continues to spin as long as the latter remains in motion.

In the event that from any cause a top is pushed out of contact with the fly wheel, it will almost instantly gravitate back until reengaged by the fly wheel because of the pitch or inclination of the base of the channel.

The cutting of the motor out of circuit at predetermined intervals is not only for the purpose of economizing in the cost of operation but is also for the purpose of effecting a variation in the speed of the rotation of the fly wheel and consequently of the tops, as by

spinning the latter at a very high rate of speed and letting them gradually die down, constantly changing effects are produced because of the relative or corresponding changes of speed between the color and cover cards. In other words the same color and cover cards upon a top driven at a uniform speed will produce an effect which changes according to the numbers of different combinations of colors of the cover card. By running said tops at varying speeds, the colors of the color cards are exposed for varying lengths of time and consequently produce effects not possible where a uniform speed is maintained.

Should the shafts 12 and 19 wear to such an extent as to permit the commutator of the motor and the collar 17 to settle down on the underlying bearing of the frame of the motor, and the fly wheel to settle down on the bearing 20, and thus create an undesirable friction, the screw 14 is screwed upward until the rotary parts referred to are raised above said bearings, as shown in Figs. 1 and 3, and should it be desired to vary the length of time during which the motor is positively driven, the brush 8 can be bent upwardly or downwardly slightly so that it shall remain for a longer or shorter period of time in contact with each tooth of wheel 4.

From the above description it will be apparent that I have produced a mechanical demonstrator for color-changing tops embodying the features of advantage enumerated as desirable in the statement of the object of the invention and I wish it to be understood that I reserve the right to make such changes in the form, proportion, detail construction and arrangement of the parts as shall not be a departure from the principle and scope of the appended claims.

Having thus described the invention what I claim as new and desire to secure by Letters-Patent is:—

1. In a device of the character described, a rotating wheel, and a plurality of tops arranged around and peripherally engaging the periphery of said wheel.

2. In a device of the character described a rotating wheel, a plurality of tops arranged around and peripherally engaging the periphery of said wheel, and bearings for the points of said tops, pitched downwardly and inwardly toward said wheel.

3. In a device of the character described a rotating wheel, a plurality of tops arranged around and peripherally engaging the periphery of said wheel, and bearing channels to receive the points of said tops and pitched downwardly and inwardly toward said wheel.

4. In a device of the character described, a horizontally arranged wheel, means for positively imparting rotary movement to the same at intervals and then permitting it to rotate through the momentum acquired, and

a plurality of tops mounted upon a suitable support and bearing peripherally against the periphery of said wheel.

5 In a device of the character described, a horizontally arranged wheel, means for positively imparting rotary movement to the same at intervals and then permitting it to rotate through the momentum acquired, and a plurality of tops mounted upon a suitable support and bearing peripherally against the periphery of said wheel, said bearings for the tops being pitched downwardly and inwardly toward said wheel.

15 6. In a device of the character described, a horizontally arranged wheel, means for positively imparting rotary movement to the same at intervals and then permitting it to rotate through the momentum acquired, and a plurality of tops mounted upon a suitable support and bearing peripherally against the periphery of said wheel, said bearings for the tops being pitched downwardly and inwardly toward said wheel and having parallel flanking walls extending radially of the axis of the fly wheel.

25 7. A mechanical demonstrator for color-changing tops, comprising a shaft to be periodically driven at a high rate of speed, a fly wheel bearing a journaled relation to said shaft, and a clutch connection between said shaft and fly wheel, comprising a pin rotatable with the shaft, and a sleeve rotatable

with and vertically movable independently of the fly wheel, and provided with a ratchet tooth at its lower end, the abrupt face of said tooth being adapted to be engaged by the pin when the speed of the shaft exceeds that of the fly wheel and the beveled face of said tooth to ride over said pin when the speed of the flywheel exceeds that of the shaft.

40 8. A mechanical demonstrator for color-changing tops, comprising a shaft to be periodically driven at a high rate of speed, a fly wheel bearing a journaled relation to said shaft, and a clutch connection between said shaft and fly wheel, comprising a pin rotatable with the shaft, a sleeve rotatable with and vertically movable independently of the fly wheel, and provided with a ratchet tooth at its lower end, the abrupt face of said tooth being adapted to be engaged by the pin when the speed of the shaft exceeds that of the fly wheel and the beveled face of said tooth to ride over said pin when the speed of the fly wheel exceeds that of the shaft, and a collar rigid with the fly wheel and fitting in and having a pin and slot connecton with said sleeve.

In testimony whereof I affix my signature, in the presence of two witnesses.

CHARLES VICTOR CUNNINGHAM.

Witnesses:

M. C. BAKER,
HARRY GRIFFITH.