Jan. 13, 1948. C. R. PALMER 2,434,513

BUFFING AND POLISHING MACHINE

Filed March 22, 1945 2 Sheets-Sheet 1

Fig. 1.

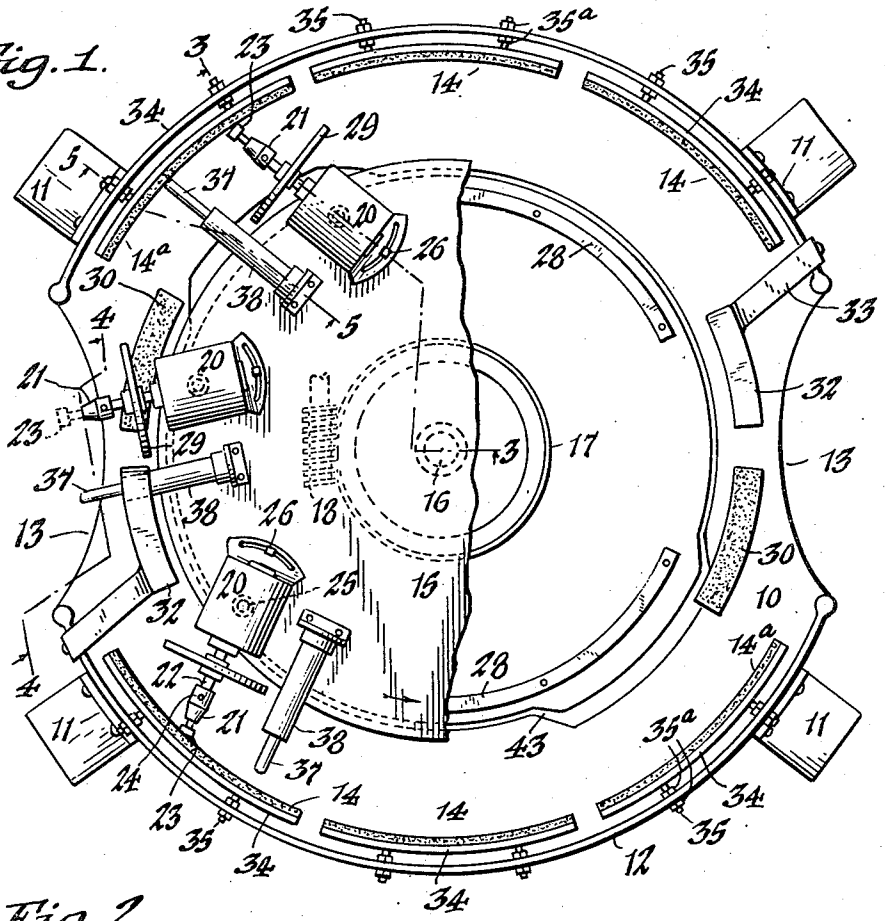
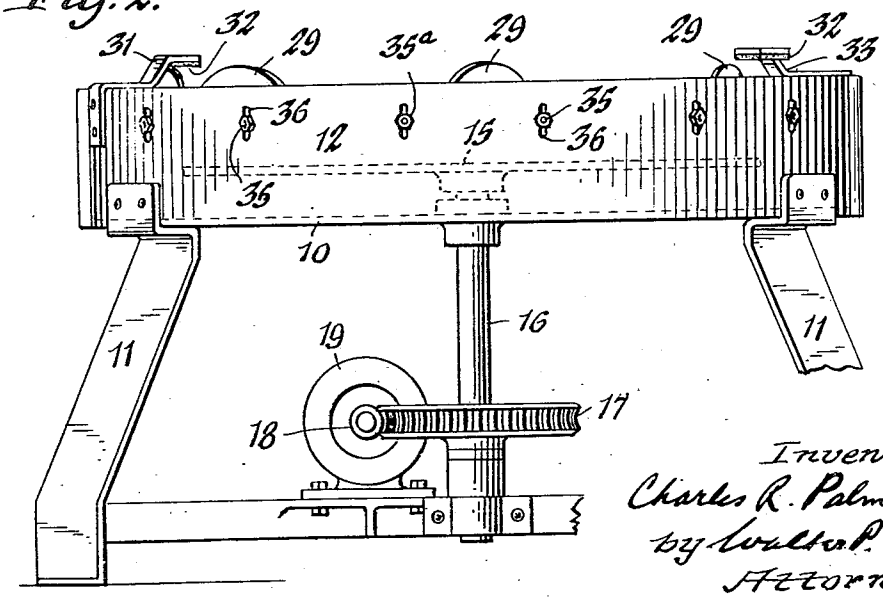


Fig. 2.



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Fig. 3.

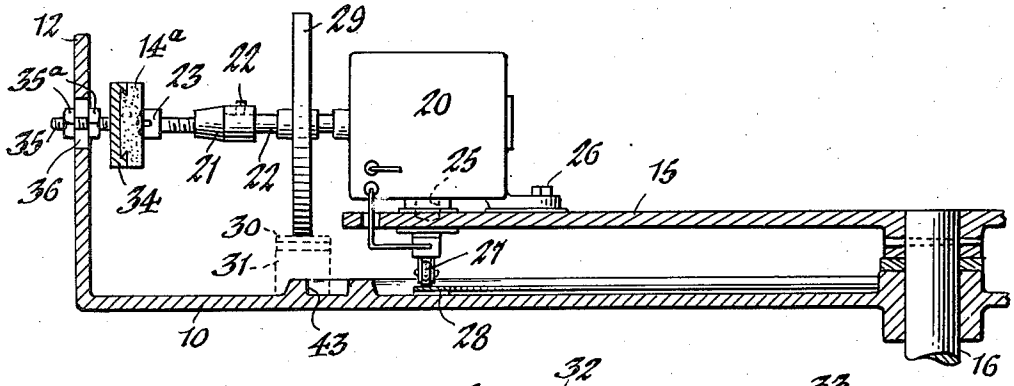


Fig. 4.

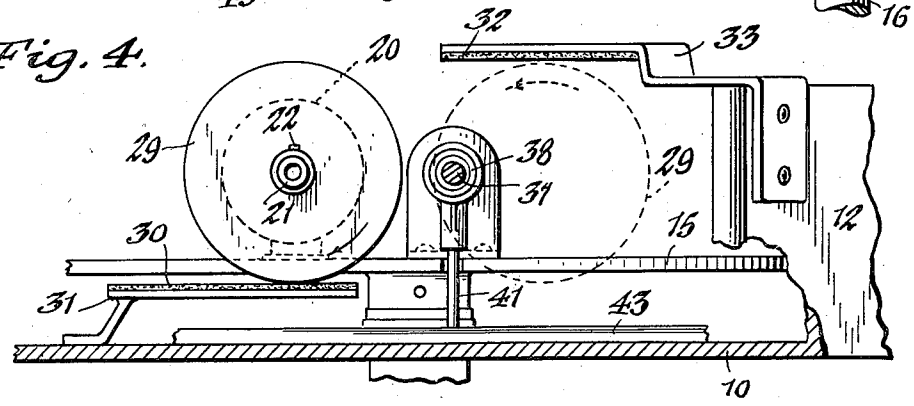
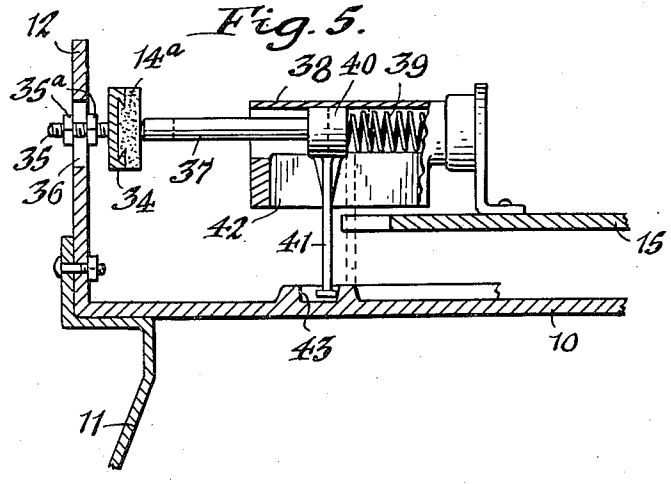


Fig. 5.



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BUFFING AND POLISHING MACHINE

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7 Claims. (Cl. 51—154)

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This invention relates generally to the art of buffing and polishing but more particularly to an apparatus for buffing or polishing the heads of screws and the like.

It has for one of its objects to provide an apparatus of this character which is so designed and constructed as to expeditiously buff and polish the heads of screws and like articles, which is simple and compact in construction, and which requires a minimum of floor space.

Another object of the invention is to provide a buffing and polishing machine having novel means disposed at predetermined points for acting upon the face as well as the side of the screws being treated, in combination with individually-driven spindles on which the screws are supported, and which spindles are selectively and automatically-governed to rotate during the screw-treating operation and to be arrested during the insertion and removal of screws to and from the same.

A further object is to provide the machine with simple and effective means for facilitating the application of the articles to and their removal from the spindles.

Other features of the invention reside in the construction and arrangement of parts hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a top plan view of the apparatus. Figure 2 is a fragmentary side view thereof. Figure 3 is an enlarged cross section taken on line 3—3, Figure 1. Figure 4 is an enlarged fragmentary vertical section taken on line 4—4, Figure 1. Figure 5 is an enlarged cross section taken on line 5—5, Figure 1.

Similar characters of reference indicate corresponding parts throughout the several views.

Referring now to the drawings showing the preferred embodiment of my invention, its working parts are mounted on a suitable frame including a substantially circular base plate 10 supported on legs 11 and having an upright annular flange 12 extending about its periphery. At its diametrically opposite sides this base plate is recessed or relieved adjacent its periphery, as indicated at 13, to provide stations for two operators whose duty it is to handle the screws or other articles for insertion in the apparatus for polishing or buffing and then removing them after treatment, without stopping the machine. Applied in circumferential fashion to the inner side of the base-flange between the operator stations are a plurality of article-treating surfaces

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which may consist of polishing and buffing elements 14 and 14a, respectively, with which the screw-heads engage during the operation of the machine.

Surmounting the base plate 10 and concentrically disposed in spaced relation within the flange thereof is a revolving table or platform 15 which serves as a carrier for a multiple-spindle assembly to which the screws or like articles ed on the upper end of an upright shaft 16 journaled in the base plate and having a worm wheel 17 thereon meshing with a worm 18 driven by an electric motor 19 or like source of power. This multiple-spindle assembly consists of a plurality of electric motors 20 mounted in annular-spaced relation on the top side of this revolving table with their axes substantially parallel therewith and in endwise relation to the treating elements 14, 14a, each motor having an adjustable fitting or chuck-like member 21 applied to the outer end of its spindle-forming shaft 22 for detachably receiving a screw 23 or other article whose head is to be buffed and polished. This chuck-like member is adjustable axially of the motor-shaft to accommodate screws of varying lengths and may be held in a set position by a set screw 24 or like fastening. As shown in the drawings, each motor is preferably mounted with its axle at an angle to the radial planes of the table so as to present the screw-head in more or less angular or partially sidewise relation to the buffing and polishing elements, and insure an effective buffing and polishing action over the top as well as the side faces of the head of the screw. In order to present the screw to be buffed at the desired angle to the buffng and polishing elements, depending on the type of screw being treated, each motor is mounted on a vertical swivel post or stud 25 to be adjustable thereabout, a clamping bolt 26 or like fastening being employed for adjustably setting the motor in a given position. In practice, the table 15 rotates continuously at a slow speed while the motors 20 rotate intermittently or at such times they travel past the elements 14, 14a and at a high speed and in a direction counter to that of the travel of the table.

Each chuck-driving motor 20 is adapted to be automatically rendered operative to revolve its chuck while traversing or in registering relation with the treating elements 14, 14a and to be rendered inoperative while traveling past or in register with the stations 13 to enable the operators to remove a finished screw from the companion chuck and thereafter insert another

screw therein for buffing and polishing. For this purpose each motor has a terminal brush or contact 27 which is adapted to make electrical contact with one or the other of two collector-ring segments 28 included in the power circuit and applied to the top side of the base plate 10 at diametrically opposite sides thereof and between the operating stations 13. Thus, when the machine is in operation and as the terminal brushes of the respective motors encounter and leave one or the other of the companion segments 28, the motor-circuits are closed and opened, respectively, the spacing of the motors being such that when one of them is entering an operating station with its finished screw the adjoining one is leaving after having been chucked with a screw to be finished. Each motor is also preferably provided with a brake drum 29 fixed on the shaft thereof inwardly of its chuck 21 and adapted, after the motor circuit is opened, to engage a brake shoe 30 disposed in its lower path for promptly retarding the turning of its chuck, such shoe being mounted on a suitable bracket 31 applied to the base plate 10. This drum-engaging shoe is located adjacent the approach to the operator's station and is of an extent to compel, by frictional peripheral contact with the drum, a slow rotation of the chuck-spindle and during this time the operator grasps the head of the finished screw 23, either manually or with an appropriate tool, while the relative motion transmitted to the chuck causes the screw to be released or unscrewed from the chuck. A second shoe member 32 is disposed substantially centrally of the operator's station on an overhanging bracket 33 for frictional contact with the upper side of the brake drum to compel rotation of the chuck in the opposite direction and in a like manner facilitates the insertion, by a screwing action, of another screw in the chuck in readiness for polishing and buffing.

The polishing and buffing elements, indicated generally at 14, 14a, may be of any suitable construction and shaped to effectually operate upon the face and sides of the screw-head, and are further so mounted as to be adjustable both vertically and radially inward and outward to properly operate upon different shaped screw heads, as well as for wear purposes. To this end each element, which may be made of felt or like material, is removably applied to a backing strip 34 mounted on the inner face of the base plate flange 12, and carrying screw-studs 35 engaging upright slots 36 in such flange and having lock nuts 35a thereon for retaining such element in its set position of adjustment.

Disposed alongside each chuck-driving motor 20, and in advance thereof relative to the direction of turning of the table 15, is an applicator 37 for applying a cutting compound of suitable material to the buffing element 14 as it traverses the same and which applicator is adapted to be retracted to an inoperative position at other times. This applicator is guided for substantially radial inward and outward movement in a guide tube 38 mounted in any appropriate manner on the table in parallel relation to the axes of the motor 20. A spring 39 is provided for constantly urging the applicator outwardly for operative contacting engagement with the buffing element to properly treat it for buffing the heads of the screws 23. Depending from an attaching sleeve 40 telescopically fitted in the guide tube, and to which the applicator is removably connected, is a pin 41 extending through a longitudinal slot 42 in such tube and engaged at its lower end with a cam-groove 43 or the like formed in the top side of the base plate 10 about the axis of the revolving table 12. This cam-groove is shaped to cause the spring-urged applicator to move into contact with the buffing element at such times as there parts are in registration and to accordingly cause the applicator to be retracted out of its operative position when such parts are out of registration. By this construction the buffing elements are automatically and regularly treated with the cutting compound to make for a thorough and reliable buffing treatment on the heads of the screws 23.

I claim as my invention:

1. A machine of the character described, comprising a frame including a substantially circular base plate having means thereon for supporting a plurality of circumferentially-disposed stationary buffing and polishing elements, a table rotatably supported on said frame, below the plane of said elements, a plurality of horizontally-disposed spindle assemblies mounted on said table with their spindles in end-wise relation to and for detachably supporting the articles to be treated for operative engagement with said buffing and polishing elements, means for continuously rotating said table, and means for intermittently transmitting motion to said spindle assemblies when they are in registering relation with said buffing and polishing elements.

2. A machine of the character described, comprising a frame having a substantially upright circular portion recessed at a side thereof to provide an operator's station and having a plurality of stationary article-treating elements disposed in annular fashion on the inner side of such portion beyond said station, a table rotatably supported on said frame in concentric relation to the circular portion thereof, a plurality of revolving article-supporting spindles mounted on said table for presenting the articles to said elements for treatment, means for transmitting motion to said spindles only when traversing said elements, and complementary contacting means on said spindles and said frame for retarding the turning of the spindles as they travel out of operative relation with the treating elements.

3. A machine of the character described, comprising a frame having a substantially upright circular portion recessed at a side thereof to provide an operator's station and having a plurality of stationary article-treating elements disposed in annular fashion on the inner side of such portion beyond said station, a table rotatably supported on said frame in concentric relation to the circular portion thereof, a plurality of revolving article-supporting spindles mounted on said table for presenting the articles to said elements for treatment, means including control devices for individually transmitting motion to said spindles only when traversing the article-treating elements, and means disposed adjacent the recessed side of the frame in the operative path of and for braking the turning of said spindles as they travel out of operative relation with said elements and into register with the operator's station.

4. A machine of the character described, comprising a frame having a substantially upright circular portion recessed at a side thereof to provide an operator's station and having a plurality of article-treating elements on the inner side of such portion beyond said station, a table rotatably supported on said frame in concentric rela-

tion to the circular portion thereof, a plurality of revolving spindles mounted on said table having chucks thereon to removably receive articles for presentation to said elements for treatment, each spindle having a drum thereon, means including control devices for individually transmitting motion to said spindles only when traversing said elements, and a brake member mounted on said frame adjacent the operator's station and in the contacting path of said drum for retarding the turning of the spindles as they travel out of operative relation with the treating elements, said brake being of a length to compel by frictional contact with the drum a turning of the spindle in a reverse direction to facilitate the removal of the treated article from its companion chuck.

5. A machine of the character described, comprising a frame having a substantially upright circular portion recessed at a side thereof to provide an operator's station and having a plurality of article-treating elements on the inner side of such portion beyond said station, a table rotatably supported on said frame in concentric relation to the circular portion thereof, a plurality of revolving article-supporting spindles mounted on said table for presenting the articles to said elements for treatment, means including control devices for individually transmitting motion to said spindles only when traversing the article-treating elements, and complementary engageable means on said spindles and said frame for causing a relatively slow turning of each spindle in a given direction as it enters the operator's station and a turning of each spindle in the reverse direction as it leaves the operator's station.

6. A machine of the character described, comprising a frame having a substantially upright circular portion recessed at a side thereof to provide an operator's station and having a plurality of article-treating elements on the inner side of such portion beyond said station, a table rotatably supported on said frame in concentric relation to the circular portion thereof, a plurality of revolving article-supporting spindles mounted on said table for presenting the articles to said elements for treatment, and means mounted on said table and engageable with said elements for treating them with a buffing or polishing compound.

7. A machine of the character described, comprising a frame having a substantially upright circular portion recessed at a side thereof to provide an operator's station and having a plurality of article-treating elements on the inner side of such portion beyond said station, a table rotatably supported on said frame in concentric relation to the circular portion thereof, a plurality of revolving article-supporting spindles mounted on said table for presenting the articles to said elements for treatment, and means mounted on said table and engageable with said elements for treating them with a buffing or polishing compound, said means including a member having means for normally urging it into operative contact with said elements and complementary engaging members for retracting such member from said elements while traversing the operator's station.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,319,921	Bock	Oct. 28, 1919
615,383	Ellis	Dec. 6, 1898
2,278,784	Hoern et al.	Apr. 7, 1942
1,563,714	Blue	Dec. 1, 1925