P. A. FISKER.

MACHINE FOR CLEANING, GRINDING, FINISHING, AND POLISHING OF PARQUETTED FLOORS AND SIMILAR SURFACES.

APPLICATION FILED OCT. 28, 1914.

1,224,292. Patented May 1, 1917.

2 SHEETS—SHEET 1.

Fig 1

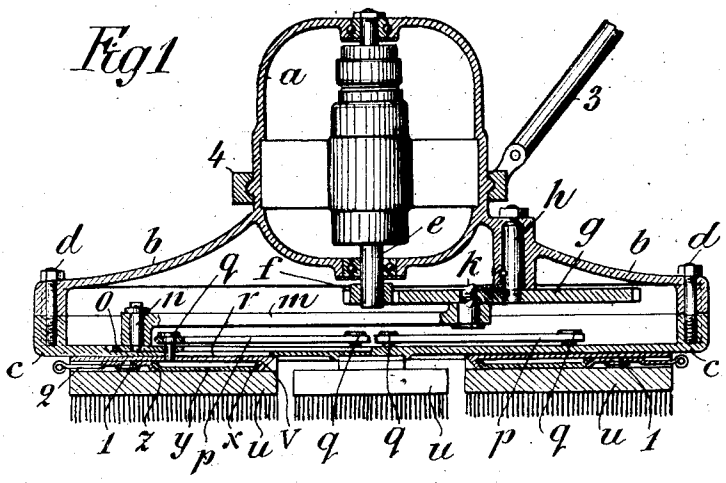


Fig 2

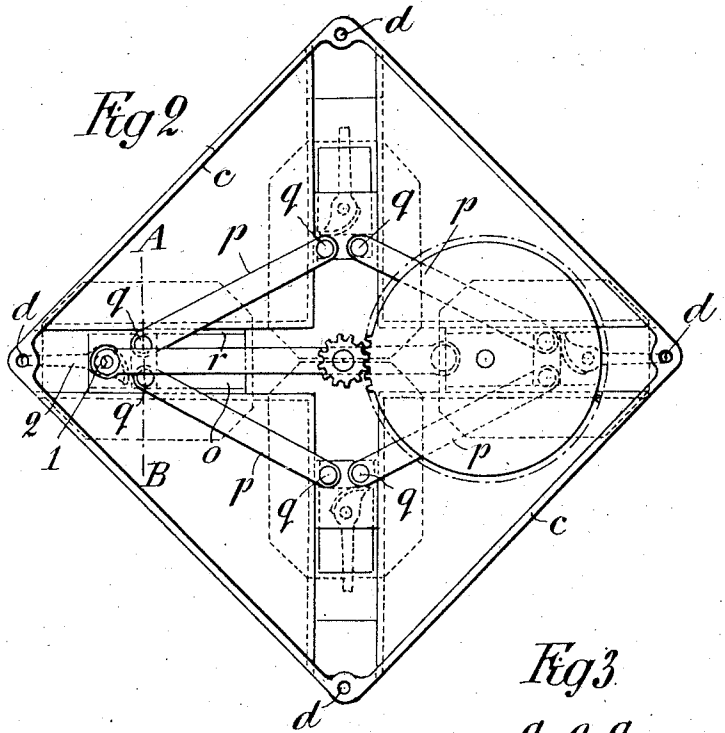
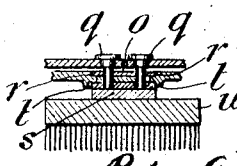


Fig 3



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2 SHEETS—SHEET 2.

Fig 4

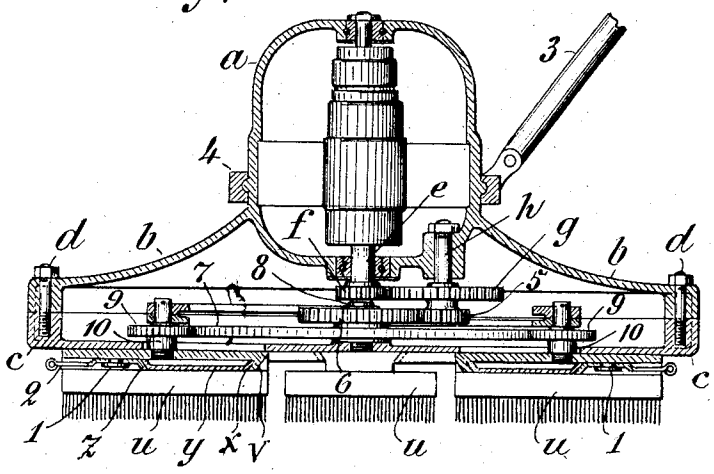


Fig 5

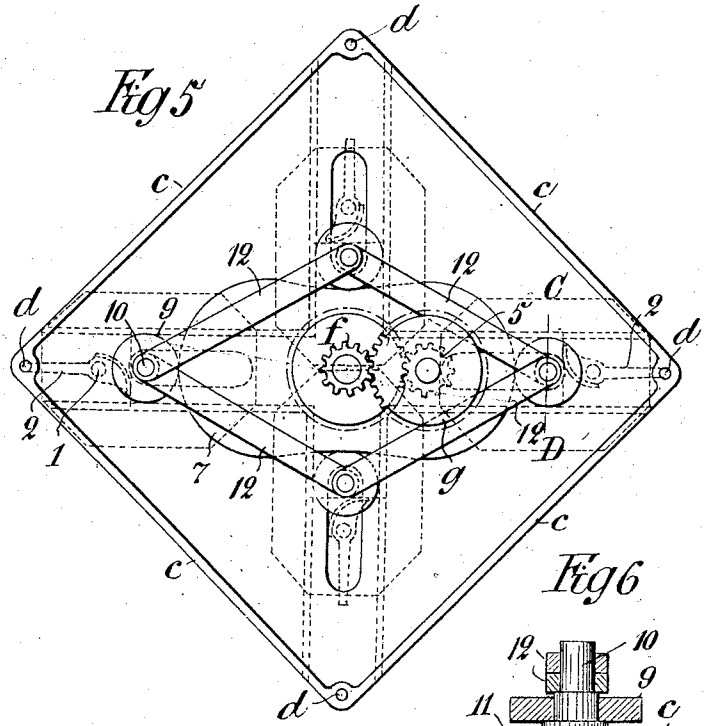
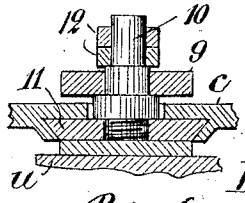


Fig 6



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UNITED STATES PATENT OFFICE.

PEDER ANDERSEN FISKER, OF FREDERIKSBERG, NEAR COPENHAGEN, DENMARK.

MACHINE FOR CLEANING, GRINDING, FINISHING, AND POLISHING OF PARQUETTED FLOORS AND SIMILAR SURFACES.

1,224,292. Specification of Letters Patent. Patented May 1, 1917.

Application filed October 28, 1914. Serial No. 869,059.

To all whom it may concern:

Be it known that I, PEDER ANDERSEN FISKER, a subject of the King of Denmark, residing at Frederiksberg, near Copenhagen, Denmark, have invented certain new and useful Improvements in Machines for Cleaning, Grinding, Finishing, and Polishing of Parquetted Floors and Similar Surfaces, of which the following is a full, clear, and exact description.

The invention relates to floor finishing machines. The hitherto existing machines of this kind have the drawback that their brushes, which are either rotating on the axis of the machine or reciprocate in one direction toward the middle of the machine, either only to a small extent or as a rule not at all work the parquetting staffs in the right directions, *i. e.* lengthwise as well as crosswise of the fibers of the wood. The rotating brushes never work completely in the direction of the fiber of the wood, and the brushes reciprocating in single direction can under the most favorable circumstances only be brought to work the wood in both directions by being continuously turned, and their field of working is in such case very small.

Through the present invention these drawbacks are avoided, the machine having a large working field, and at least half the work of the brushes being effected in the direction of the fibers of the wood, while the remainder is effected crosswise of the same, and hereby the best possible effect and efficiency of such a machine is obtained. Further the same apparatus can by omission by one or more brushes or by substitution of the brushes by other organs of a different size, form and nature be used under many different circumstances and for various objects. Further it is possible to use one or more of the brushes for rubbing in of wax and the rest of the brushes for polishing, so that these operations can be carried out in immediate succession without interchanging of brushes or use of special applying apparatus.

Two modifications of the invention are shown in the drawings where—

Figure 1 shows a vertical section of the machine,

Fig. 2 a horizontal section of the same,

Fig. 3 a detail in section on the line A—B, Fig. 2,

Fig. 4 a vertical section of another modification,

Fig. 5 a horizontal section of the same, and

Fig. 6 a detail in section on the line C—D in Fig. 5.

a, Fig. 1 is an electro-motor of known construction the casing of which extends downwardly into a square dish *b*. The downwardly bent edge of the dish *b* rests against the upwardly bent edge of the likewise square dish *c*, and between the dishes *b* and *c* which are kept together by four bolts *d*, is thus formed a closed hollow space in which are located the movable parts protected against the influence of dust. The shaft *e* of the electro-motor is on its lowermost end provided with a gear *f* engaging with a gear *g*, which is turnably suspended on the shaft *h* journaled in the dish *b*. At a suitable distance from the middle of the gear *g* is arranged a pivot *k* on which one end of the connection rod *m* can rotate. The other end of the connection rod engages a pivot *n*, which is fastened to the slide *o*, which latter by means of the links *p* and the pivots *q* is in movable connection with the slides so that the gear *g* by means of the connection rod *m* is able to move all of the slides contemporaneously. The dish *c* is provided with the guides *r* between which the slides *o* can move, and between the guides *r* are oblong openings in the dish *c*, through which are led the pivots *q* connecting the slides *o* with the corresponding slides *s* traveling on the guides *t*, which are arranged on the undermost side of the dish *c*. On the slides *s*, which are of such size that they constantly keep the openings in the dish *c* covered, the tools, in this case the brushes *u*, are secured. On the side toward the middle of the machine the slides *s* have an oblique outwardly bent edge *v* corresponding to the oblique edge *x* on the fastening piece *y* for the brushes. The fastening piece *y* has an outwardly pointing obliquely arranged edge *z* in the opposite direction of the edge *x*, against which edge is pressed the supporter 2, which is eccentric and turnable on the pivot 1, the eccentrical side of which is formed as an oblique sur-

face corresponding to the slope of the edge *z*. This manner of fastening makes it possible without use of tools to easily remove or apply the brushes by a single handle.

If now the motor is started, the motion of the same is transmitted through the gears *f* and *g* to the connection rod *m* which transforms the motion to a reciprocating motion. The slides *o* and *s* and the brushes fastened on the same are then by means of the links *p* moved in the direction toward and away from the middle of the machine, so that two oppositely arranged brushes are contemporaneously carried toward and two oppositely arranged brushes away from the middle.

According to the modification shown in Figs. 4, 5 and 6 a gear 5 is arranged in firm connection with the gear *g* and turnable on the pivot *h*, which gear 5 engages with a gear 6 which is in firm connection with the cam disk 7 and turns on the pivot 8. The disk 7 acts on the rolls 9 which turn on pivots 10 which are arranged in firm connection with the slides 11. The four pivots 10 are connected in pairs by means of the links 12, as shown.

If now the motor is started, the motion is transmitted to the disk 7 which turns on the pivots 8 and alternately presses out one or the other pair of the pivots 10. The links 12 at the same time carry the other pair toward the center.

Two cranks or eccentrics may be used in lieu of the disk 7, which may be connected with two oppositely arranged pivots 10, by means of connecting rods. The motive power will then always act upon the same two pivots.

In both modifications the brushes thus work the same area of floor in two different directions, and when such a machine is led across the surface of the floor, an exceedingly speedy and thorough cleaning and polishing is obtained, the organs of the apparatus executing about the same motion as those which are effected by polishing by hand. Further, it is evident that in case the parquetted floor consist of staffs which are laid perpendicular to one another, which is generally the case, two of the brushes work the wood in the direction of its fibers, while the two other brushes work across the fibers, and it is a matter of fact that the most speedy, finest and most thorough grinding and polishing of wooden surfaces is obtained by working the surface in different reciprocating directions.

Instead of four even-sized brushes the machine may, where special circumstances might make it desirable, be provided with two large and two small oppositely disposed brushes or with two large oppositely disposed brushes and one single intermediate narrow brush. Two opposite brushes may be wholly omitted, and larger brushes applied to the opposite slide which thus both act in the same direction, and further two different kinds of brushes may be applied, so that the machine can carry out a series of different operations, such as rubbing in of wax and polishing the floor, also the maneuvering-stick 3, Fig. 1, being arranged turnable, for instance on a ring 4, which can be secured in various positions, permits the machine to be carried ahead with one of the sides or one of the corners foremost, dependent on what might be desirable with a view to the manner of working of the special brushes.

Having now described my said invention and in what manner the same is to be performed, what I claim and desire to secure by Letters Patent of U. S. A. is:

1. A machine for cleaning, grinding, polishing or finishing of parquetted floors and similar surfaces comprising a motor, tools adapted to work the said surfaces, said tools being arranged in pairs and a transmission adapted to move two opposite tools toward the center of the machine and contemporaneously two other tools away from the same.

2. A machine for cleaning, grinding, polishing or finishing of parquetted floors and similar surfaces, comprising a motor, oppositely arranged slides adapted to accommodate tools for working of the said surfaces, each slide having an oblique bent edge, means enabling the said motor to reciprocate the said slides in pairs contemporaneously toward and away from the center of the machine, a fastening piece for the tools having an oblique edge and means for securing the said fastening piece to the said slides.

3. A machine for cleaning, grinding, polishing or finishing of parquetted floors and similar surfaces comprising a motor, tools for working of the said surfaces, means enabling the said motor to reciprocate the said tools in pairs contemporaneously toward and away from the center of the machine, a rotatable member concentric with the axis of the motor and a handle fixed to the said rotatable member and adapted to be shifted about the axis of the motor.

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

PEDER ANDERSEN FISKER.

Witnesses:

CECIL V. SCHOU,

VIGGO BLOM.