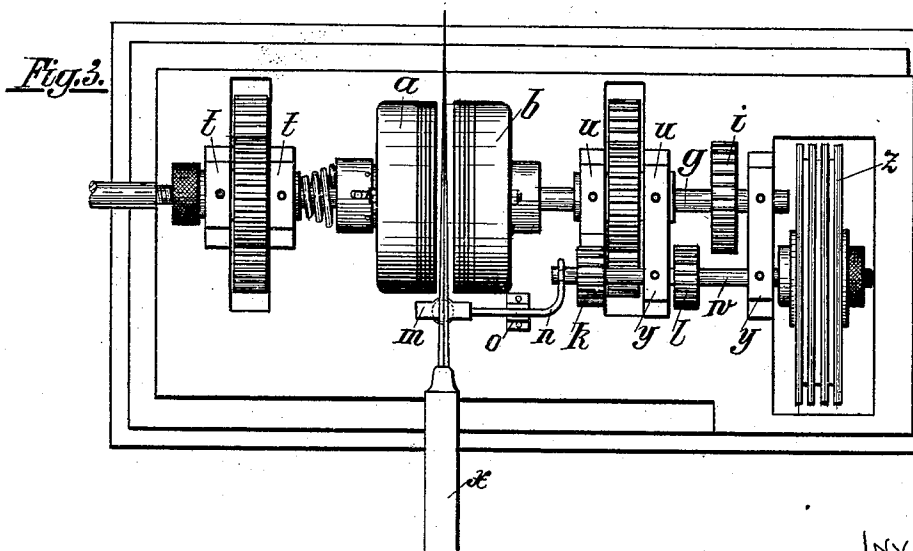
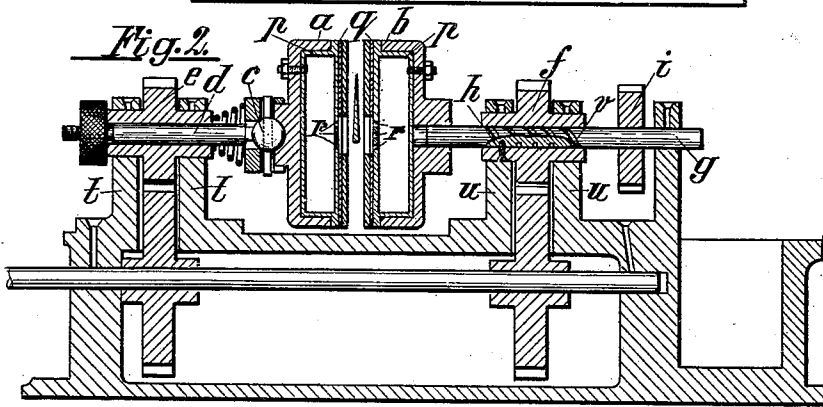
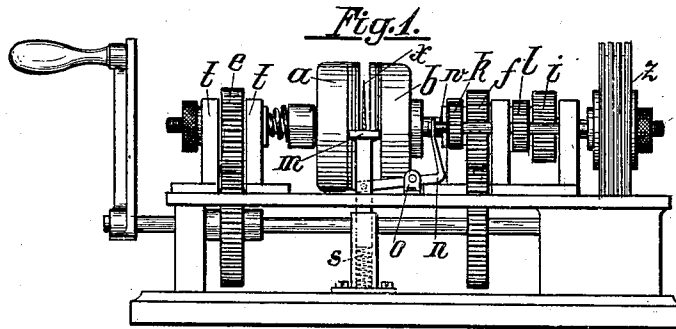


A. FISCHER.
KNIFE AND FORK CLEANING MACHINE.
APPLICATION FILED FEB. 12, 1910.

977,519.

Patented Dec. 6, 1910.

2 SHEETS—SHEET 1.



WITNESSES:

John H. Derrigan
John A. Hocking

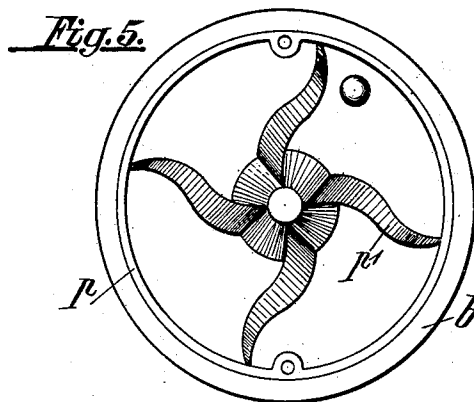
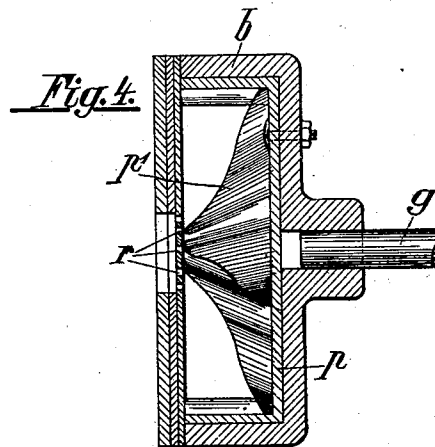
INVENTOR,
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by *Handwritten*
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ADOLF FISCHER, OF STUTTGART, GERMANY.

KNIFE AND FORK CLEANING MACHINE.

977,519.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed February 12, 1910. Serial No. 543,597.

To all whom it may concern:

Be it known that I, ADOLF FISCHER, a citizen of the German Empire, residing at Stuttgart, in the Kingdom of Württemberg, Empire of Germany, have invented certain new and useful Improvements in Knife and Fork Cleaning Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The existing knife and fork cleaning machines have all more or less the disadvantage that they do not sufficiently thoroughly clean the knives, and this is caused by the cleaning disks having an invariable position relative to one another. The knives are consequently well cleaned as a rule at the back, but only insufficiently cleaned at the cutting edge, as the disks are not able to adapt themselves to the varying wedge-shaped form of the knives to be cleaned. Efforts have however been made to remove this disadvantage by the disks being strongly pressed together. Such an arrangement has, however, in turn, the disadvantage that it renders the insertion of the knives difficult, and also frequently causes the knives to cut into the disks. Knife-cleaning machines have also been made in which the cleaning disks stand at an inclination to one another, but the permanently selected position of the disks does not correspond to every form of knife, and also the surface for operating on the cutting edges of the knives, as it lies at the periphery, is only a very small and consequently insufficient one.

The improved machine which forms the object of this invention is characterized by all these disadvantages being avoided, and not only can knives of any suitable form and size be evenly cleaned in it, but the machine is extremely simple to handle, and in consequence of its high speed, it is extremely efficient with a very small expenditure of power.

The invention will now be described with reference to the accompanying drawings in which some forms of construction are shown as an example.

Figure 1 is a view of the machine as a whole; Fig. 2, an axial vertical section; and Fig. 3, a plan view; Fig. 4 is an axial sec-

tion; and Fig. 5, an end view of an arrangement for feeding the cleaning material.

For cleaning the knives *x*, this improved knife and fork cleaning machine is provided with two cleaning disks *a* and *b*, the working surfaces of which, formed of leather pads *q* or the like, face one another. The two disks *a* and *b* are mounted on separate shafts *d* and *g* which rotate in bearings *t* and *u*, and are operated by means of toothed wheels *e* and *f* from an operating mechanism of any suitable kind, which is common to both, so that they rotate at a uniform speed. The machine illustrated in the drawings is shown for instance as being operated by hand. The toothed wheel *e* is firmly mounted on its shaft *d*, while the toothed wheel *f* is loosely mounted on its shaft *g*, and connected with the latter by a kind of clutch, as hereinafter described.

In order to enable knives of any suitable form to be cleaned over their entire surface, the cleaning disk *a* is not firmly mounted on its shaft *d*, but mounted on a ball *c* on the shaft *d*, so that the disk *a* may automatically assume an angle corresponding to the shape of the knife. In order however to allow a rotation of the disk *a*, the ball *c* is provided with catch pins, which engage with suitable play in the hub of the disk *a*. The disk *b* may of course also be mounted in similar manner, and the ball movement may also be replaced by any other suitable connection which admits of the universal mobility of the disks.

The cleaning disk *b* when not in use stands at a little distance away from the cleaning disk *a* in order to allow of the knife *x* being easily inserted. To clean the knife it must therefore be moved against the other disk *a*. By this invention this is effected automatically. For this object, the shaft *g* is arranged so as to be axially movable and is not directly mounted in the bearing *u*, but in a toothed wheel *f*, with which it is coupled, and which in turn rotates in the bearing *u*. The clutch or coupling consists of a pin *h* on the toothed wheel *f*, engaging in a screw thread *v* of suitable pitch on the shaft *g*. Under normal conditions the disk *b* rotates together with the wheel *f*, but if the disk *b* be only slightly braked, it stops, while the wheel *f* continues to rotate, that is to say the shaft *g* and disk *b* is thereby

pressed against the disk *a*. This braking of the disk *b* is preferably effected by means of the knife *x* itself, by its being slightly pressed against the disk *b* when being inserted, whereupon this latter immediately moves forward until it rests against the disk *a* which is suitably obliquely adjusted, whereupon both rotate uniformly, that is to say they clean the stationary knife. Instead of retarding the disk *b* by means of the knife itself, this may of course be equally well effected by hand by means of a suitable stop or pressure piece or the like. Both disks may also be arranged so as to be axially movable in the manner depicted.

Now in accordance with this invention, after the cleaning is completed the knife must be automatically released. For this object there is an intermediate shaft *w*, which is revoluble in bearings *y* and mounted so as to be axially displaceable, and is also connected with the support *m* by an elbow lever *n* in such a way that on the support *m* rising on the withdrawal of the knife *x*, the elbow lever *n* is turned by a spring *s* on its pivot *o* and the shaft *w* displaced. On this shaft *w* there are mounted pinions *k* and *l*, and on the shaft *g* a toothed wheel *i* in such a way that when the shaft *w* is displaced the wheel *f* gears with the pinion *k* and the wheel *i* with the pinion *l*. The gearing is also so selected that the wheel *i* is rotated more rapidly than the wheel *f*, so that on the withdrawal of a knife *x*, an automatic movement backward of the cleaning disk *b* takes place by means of the screw thread *v*, which backward movement continues so long as the operating mechanism is rotated, or it may be limited by means of a suitably arranged stop.

The working of the machine is as follows:—The knife *x* to be cleaned is inserted from above between the opened or separated cleaning disks *a* and *b* and is drawn somewhat along the disk *b*. By this means the latter is braked and caused to move forward, until the two disks *a* and *b* rest against one another, that is to say the knife is cleaned. At the same time the support *m* is pressed downward by the knife *x*, in other words, the intermediate shaft *w* is thrown out of action. When the knife is cleaned the support *m* is released, whereupon the spring *s* throws into action the intermediate shaft *w* and the cleaning disk *b* is moved back.

The two cleaning disks *a* and *b* are formed in the ordinary way as a box or casing and serve for containing the cleaning material. This is contained in receptacles *p*, which have on their face apertures *r* for the escape of the cleaning material and in accordance with this invention are removable. Leather disks *q* are then also provided on these receptacles *p*. The replenishing of the clean-

ing material and the replacement of the leather disks and so-forth may be very easily effected owing to the two disks *a* and *b* standing apart from one another and by their removability.

By reason of the improved device for pressing the disks together, a rapid rotation of the auxiliary shaft *w* is possible, so that this shaft may be employed for receiving a fork cleaning disk *z*. This is constructed in the manner hitherto customary and preferably rotates in a container which holds the cleaning medium, liquid or the like.

In Figs. 4 and 5 a preferred form of construction of the receptacle for the cleaning material is shown, and this relates to a device for always insuring a full supply of the cleaning medium. For this object arms or vanes *p'* are provided inside the receptacle *p*, which carry with them the cleaning material when the cleaning disks are rotated and also convey this cleaning material to the outlet apertures *r*. These outlet apertures according to this invention are provided in the center of the cleaning disk or as close as possible to the same, and thereby the advantage is obtained that the cleaning material, which tends to work toward the periphery of the disks is always uniformly distributed over the cleaning disks.

I declare that what I claim is:—

1. A knife-cleaning machine having a pair of rotary cleaning disks mounted displaceably on separate shafts, the centers of whose axes lie in one and the same straight line, means provided on one of the shafts for automatically approaching one disk to the other on the insertion of a knife, in combination with a pivotally mounted knife-holder connected with an auxiliary shaft for automatically causing the recession of the disk on the withdrawal of the knife.

2. In a knife-cleaning machine, a pair of rotary cleaning-disks, a screw-threaded shaft on which one of the disks is axially displaceable, in combination with a member loosely mounted on said shaft and provided with a pin engaging in said screw-thread, whereby the disk on being braked is moved forward.

3. In a knife-cleaning mechanism, an axially displaceable cleaning disk shaft, an axially displaceable gear and a fixed gear mounted on said shaft, in combination with an intermediate, axially displaceable shaft carrying gears meshing with the gears on the disk shaft, and means for displacing the intermediate shaft, the gears on the disk shaft being so proportioned that the fixed gear moves faster than the displaceable one, whereby the cleaning disk is moved backward.

4. In a knife-cleaning mechanism, a cleaning disk drive-gear, a pair of cleaning disks, the centers of whose axes of rotation lie in the same straight line, a gear mounted on an

intermediate shaft and normally meshing with the cleaning disk drive gear, in combination with mechanism actuated by the knife for disconnecting the intermediate gears 5 when the mechanism is in operation, and automatically connecting the same gears when the knife is removed.

10 5. In a knife-cleaning mechanism, a pair of cleaning disks displaceable longitudinally upon axes whose centers lie in the same straight line, one of said disks being universally mounted and controlled in its dis-

placement by a spring, in combination with means for causing the second disk to automatically approach the first on the insertion 15 of the knife and to automatically recede when the knife is withdrawn.

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

ADOLF FISCHER.

Witnesses:

KARL JASPER,
RUDOLF WOLTERS.