

[54] FINGER-TRAINING APPARATUS

109,810 3/1927 Austria 128/57

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128/57

[57] ABSTRACT

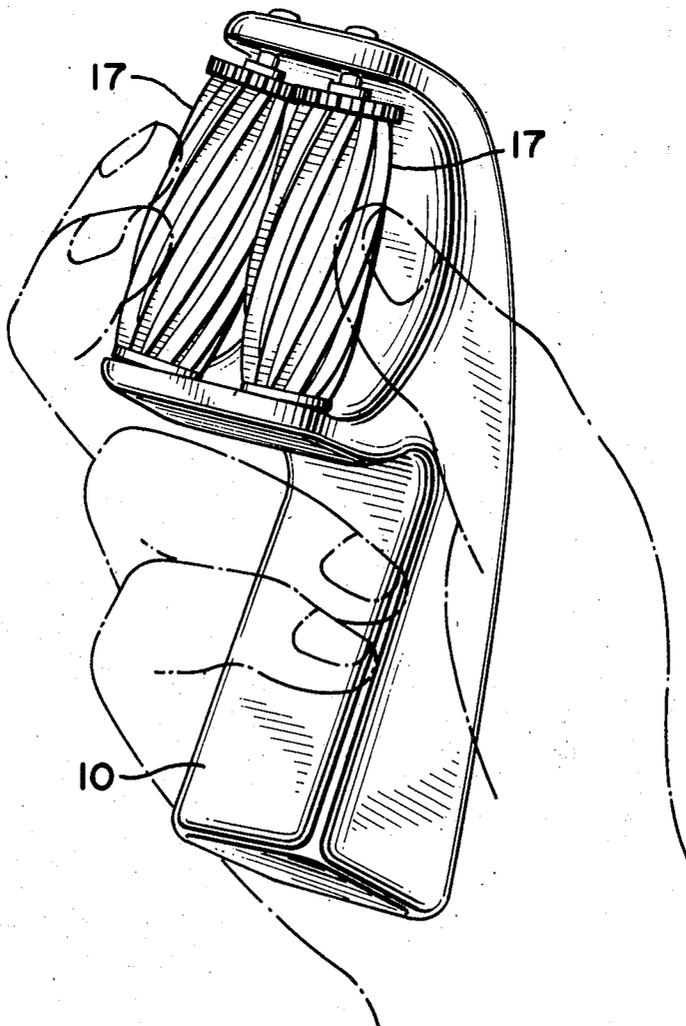
A finger-training apparatus, comprising a grip portion and a forked portion formed in connection with the grip portion. The forked portion includes two spaced arms which support a couple of juxtaposed rollers rotatable therebetween. Gears interconnect the rollers whereby rotation of one of the rollers in one direction will cause synchronous rotation of the other roller in an opposite direction.

[56] References Cited

FOREIGN PATENTS OR APPLICATIONS

233,915	3/1957	Japan.....	212/67
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4 Claims, 6 Drawing Figures



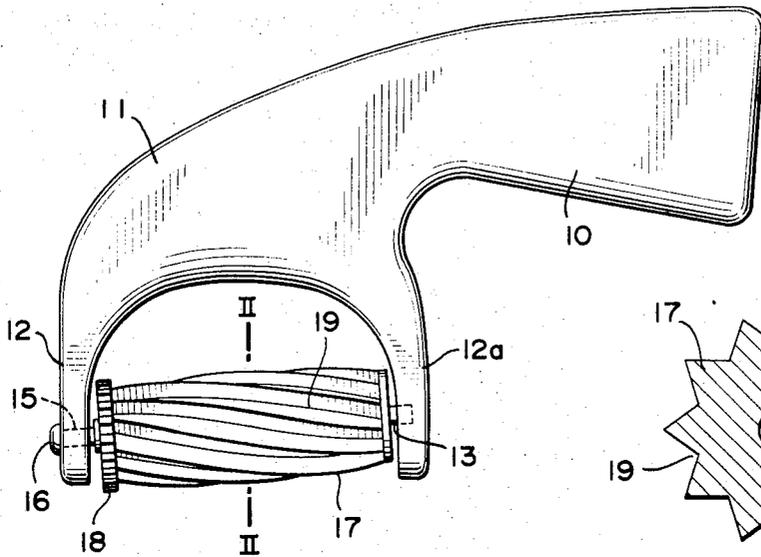


FIG. 1

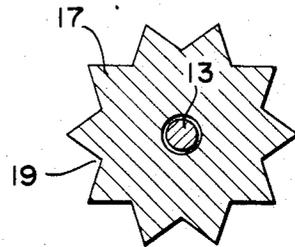


FIG. 2

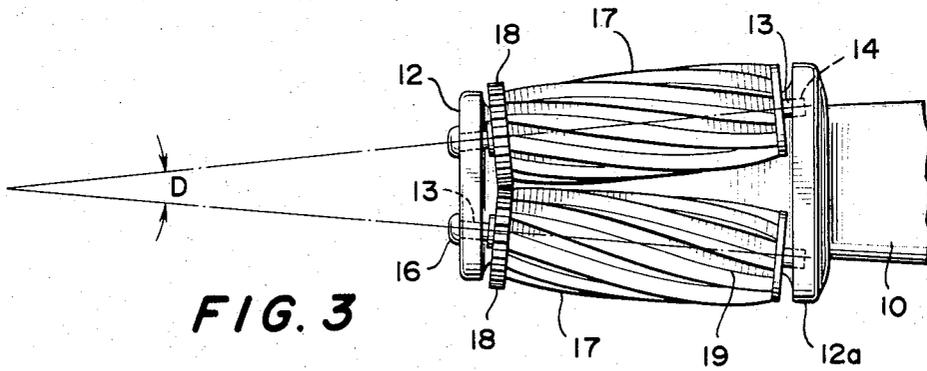


FIG. 3

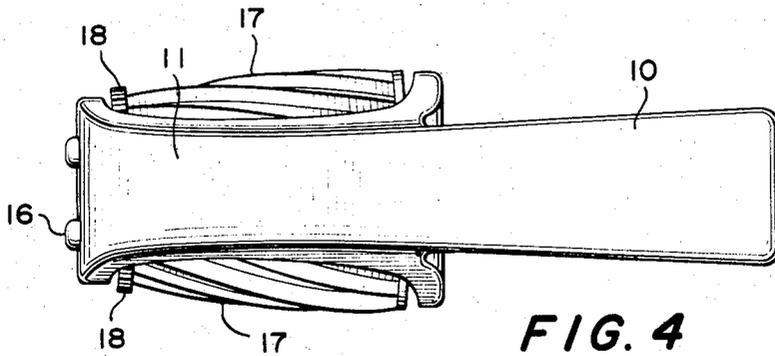


FIG. 4

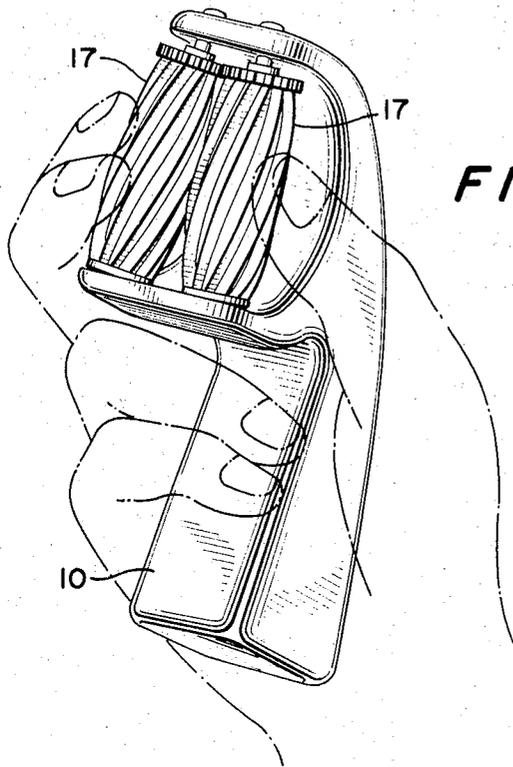


FIG. 5

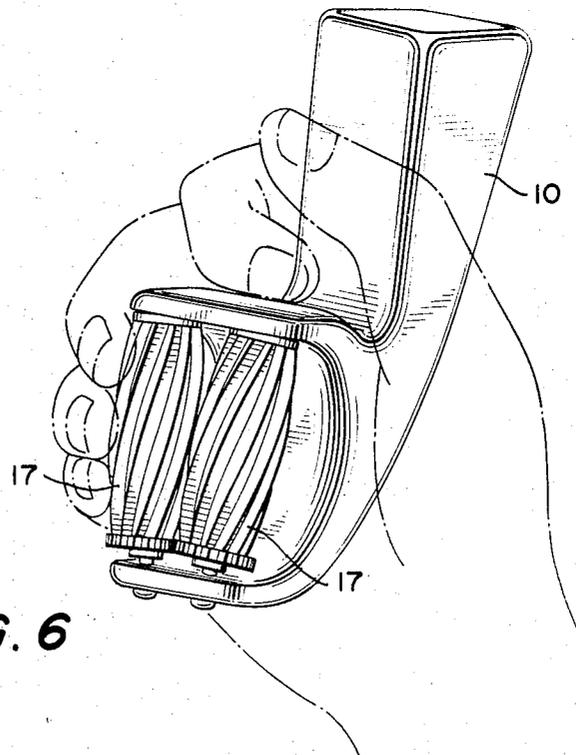


FIG. 6

FINGER-TRAINING APPARATUS

The present invention relates to an apparatus for training the human fingers, and more particularly, relates to finger-training apparatus of the type which is handy to be carried out and is usable readily by the user for the purpose of training his fingers.

Hitherto, it has long been known in the art of memory that when memorizing spellings of words, numerical formulas, etc., the memory span could be substantially improved through an exercise of writing them down in repetition. Also, as commonly accepted, the necessity of habitually exercising the working of fingers is imperative to any of professionals or technicians who need to be skillful with their fingers, such as for example musicians, typists, stenographers, telegraph operators, etc., for maintenance of and improvement on their skills. By way of further arguing the foregoing from a view of cerebral physiology, it is generally believed that particularly in case of a writing exercise, the human brain is given stimuli by flexible motions of the fingers in repeated extension and contraction that are accompanied by the association of ideas, whereby the memorizing action being enhanced while nervous and muscles associated with the moving fingers being exercised for training to improve their biological interconnected functions, so that there will be developed nervous systems or circuits of the character well adapted for better transmission of motor instructions from the brain. Further, it is also duly conceivable that even if such the above motions of the fingers are not accompanied by any association of ideas, the finger-muscles being exercised will be greatly developed to attain satisfactory controllabilities for the finger motion.

Basing upon the above described principle, the present inventor has proposed a portable finger-training apparatus as disclosed in his Japanese Patent No. 233915. This apparatus comprises a grip portion and a forked roller-supporting portion formed in connection with said grip portion, a sole roller being rotatably supported between two arms formed on the roller supporting portion. It is intended in use that one who wishes to train his fingers takes hold of the grip portion with only one of his fingers to be trained, the forefinger for example, being applied to the roller surface, and practices the training step by repeatedly bending and stretching it in a rhythmical manner, with the finger being kept in engagement with the roller. With this structure, however, it is not possible to effect a simultaneous training of the thumb, the forefinger and the middle finger altogether. These three fingers designated are of particular importance to the use of writing means, especially a writing brush, namely a lowering of motor controllabilities in any one of these three fingers results in irregularities in the style of written hand and also in the reduction of the writing speed. Therefore, for the particular purpose of improving the skill of writing it is essentially required to train the above three fingers through a simultaneous exercise of extending and contracting all of them in a repeated manner. In case of a typist, for instance, there also exists the necessity of training only a finger that is particularly awkward in motion.

Therefore, the present invention has one object to provide a portable finger-training apparatus of the type which enables a simultaneous training for the thumb and any one of other four fingers.

Another object of the invention is to provide a portable finger-training apparatus which enables a training only for any desired one of the human fingers in addition to the above training.

According to a preferred embodiment of the invention, the finger-training apparatus comprises a forked roller-supporting portion on which two juxtaposed rollers are rotatably mounted, the rollers having respective tooth for meshing engagement with each other in such a manner that when one roller rotates in a certain direction, the other is caused to rotate in the opposite direction. With this arrangement of the apparatus, when desired to use the invention to the training of hand-writing skills for example, it is intended that the user grasping the apparatus applies his thumb, forefinger and middle finger, that are to be commonly used in handwriting, to the rollers with their tips being in light touch upon the surfaces of the rollers, and practices a rhythmical motion of stretching and bending these three fingers in repetition by way of trying to trace the pattern of spellings in question as if it were in the actual case of writing on the paper with the above fingers. Relating to the above manner of exercise, it is duly conceivable that stimuli given to the fingertips by the rollers exert influence on the brain more dynamically than the provision of an imaginary pen in the brain would do, so that the spellings in question be intensely impressed in the central organs of perception whereby the memorizing function in the brain being accelerated while the nervous circuits for transmission of motor instructions issued by the brain being simplified. Actually, it has been found that through the use of the presently invented apparatus, a bad handwriting or slow writing may be cured also with a resultant improvement on the workabilities of fingers other than the above three fingers.

Other objects and features of the present invention will be apparent from the following description of its preferred embodiment in conjunction with the accompanying drawings, wherein:

FIG. 1 is a side elevational view of a finger-training apparatus according to the present invention;

FIG. 2 is a sectional view taken along the line II—II of FIG. 1;

FIG. 3 is a bottom view of the finger-training apparatus shown in FIG. 1;

FIG. 4 is a top view of the finger-training apparatus shown in FIG. 1;

FIG. 5 is a schematic view illustrating how the user practices the apparatus with his right hand for a simultaneous training of the thumb, forefinger and middle finger; and

FIG. 6 is another schematic view similar to FIG. 5 however illustrating how the user performs a simultaneous training of the middle finger, ring finger and little finger of his right hand.

In FIGS. 1 to 4 of the accompanying drawings, the finger-training apparatus comprises a grip portion 10 adapted for hold holding by the user, and a forked roller-supporting portion 11 formed forwardly and in connection with the grip portion. Alternatively, the roller supporting portion 11 may be connected to the grip portion 10 in a detachable manner, if such desired, which conveniently enables the selection of a proper-sized grip portion 10 according to the palm size of the user.

The forked roller-supporting portion 11 has two spaced arms 12, 12a which extend downwardly, as viewed in FIG. 1, with one in front and the other in the rear, and these arms carry a couple of shafts 13, 13 juxtaposed therebetween. One end of each shaft 13 is in shrinkage fit in a blind hole 14 formed on the rear arm 12a while the other end being also in shrinkage fit in a through-hole 15 on the front arm 12. The head 16 of each shaft 13 is in engagement with the outer surface of the front arm 12.

As shown, a roller 17 is rotatably mounted on each shaft 13. In this concern, it may alternatively be arranged that by providing journals at both ends of each roller 17, the rollers be in loose fit in respective blind holes formed on the inner sides of the front and rear arms 12, 12a. This alternative arrangement eliminates the provision of the above described shafts 13. The rollers 17 have respective spur gears 18 at their front ends for meshing engagement with each other, so that synchronous rotation of the paired rollers 17 be attainable to facilitate a simultaneous training of fingers reducing risks of unevenness in the training effect. It is noted that in a further embodiment, not shown here, of the invention, there is no provision of such meshing gears on the rollers, however the effect of finger training achieved in this case might be lessened to some extent. Each roller 17 is in the shape of a bulge or is diametrically enlarged of its middle, and provides therearound a plurality of substantially longitudinally extending grooves 19 in rows (See FIG. 2), which serve to facilitate engagement of the fingertips with the rollers during use of the apparatus, as will be described hereinafter. The configuration of the roller is not necessarily limited to that illustrated herein, but may be cylindrical for example. The grooves 19 on each roller extend somewhat twistingly of the roller axis, which also facilitates the effect of engagement between the fingertips and the rollers. Any suitable angle of twisting can be provided as desired. Further, alternatively, each roller may be provided with a plurality of properly spaced projections therearound, in place of the described grooves 19.

As can be seen in FIG. 3, the shafts 13 are placed both in a common plane with their axes extending oblique to each other in a convergent angle indicated at D. The degree of this angle D may be predetermined properly depending on the desirous conditions of engagement between the fingertips and the rollers. Although there will admittedly be no full engagement between the two spur gears described above with this arrangement, it is to be understood that actually the spur gears do not need to be in complete mesh since the rollers 17 functionally have only to achieve synchronous movement of bending and stretching the thumb and forefinger, for example, as will be referred to hereinafter. Of course, these spur gears may be substituted by bevel gears if a more smooth gear mesh is desired.

In the illustrated embodiment, the gears 18 are shown as mounted at the front ends of the associated rollers 17, however they may alternatively be mounted at the rear ends of the rollers. The additional provision of not shown means for releasing the gears from mesh engagement, conveniently enables the training exercise of a sole finger through one roller only.

Referring, now, to FIG. 5, the finger-training apparatus according to the present invention is shown as being ready for operation with the grip portion 10 grasped between the third finger, little finger and the hollow of

the user's right hand, and with the grooves 19 of the rollers 17 being engaged by the tips of the thumb and the forefinger, middle finger, respectively. From this starting position, repeated motion of simultaneously bending and stretching the thumb, forefinger and middle finger altogether is effected while keeping all the fingers in engagement with the respective rollers. This motion exercise is best suitable to the training of handwriting. By way of envisaging a word spelling, for example, to be memorized while assuming a posture exactly the same as that for an actual letter-writing with writing means, it will be appreciated that such a rhythmically stretching and bending motion of fingers causes a significant enhancement of the user's memorizing function. Besides, thanks to substantial improvement on controllabilities of finger motion attainable through this training practice, the user will be able to write a fluent and yet pretty hand.

With the fingers positioned in a manner shown by FIG. 6, it is also possible to accomplish a simultaneous training for the middle finger, ring finger and little finger altogether. This is very likely to meet the purpose of finger-training by a typist. Also, when it is desired to practice the training of only a sole finger, the little finger of a typist for example, it is possible, through the provision of the above described releasing means for disengagement of the two gears on the rollers 17, to reduce the rate of a resisting load working against the finger.

Each roller 17 may be properly determined of its weight depending on the specified purpose of training or the convenience of handling by the user. In this connection, it will be more advantageous to design the apparatus such that the rollers are detachable from the roller supporting portion.

Although the finger-training apparatus according to the invention may be made of any suitable material, it is preferred that the shafts for supporting rotatable rollers be metal made and other parts be all made of plastics.

It is to be understood that the present finger-training apparatus may be used not only in manners shown by FIGS. 5 and 6, but also may be used in other varied manners.

Although the present invention has been so far illustrated and described of its preferred embodiments, it also is to be understood that the invention is not limited only to those but may be modified or changed in various ways within the scope of the annexed claim.

I claim:

1. A finger-training apparatus, comprising a grip portion shaped to be held by one hand of a human, a forked roller supporting portion including two spaced arms, two rollers positioned between said spaced arms and rotatably journaled thereto, means connecting said rollers whereby rotation of one of said rollers in one direction will cause synchronous rotation of the other roller in an opposite direction, and means connecting said grip portion and said roller supporting portion whereby at least one finger of the hand which grasps said grip portion may engage and digitally rotate one of said rollers.

2. A finger-training apparatus as set forth in claim 1 characterized in that said rollers have axes of rotation extending obliquely to each other.

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3. A finger-training apparatus as set forth in claim 1 characterized in that said means connecting said rollers are intermeshing gears.

characterized in that said rollers provide therearound means for facilitating engagement of the fingertips with the roller surfaces.

4. A finger-training apparatus as set forth in claim 1,

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