

957,515.

T. NICHOLS.
SANDING MACHINE.
APPLICATION FILED JUNE 22, 1908.

Patented May 10, 1910.
2 SHEETS—SHEET 1.

Fig. 1.

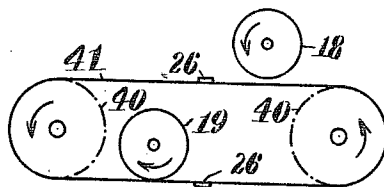
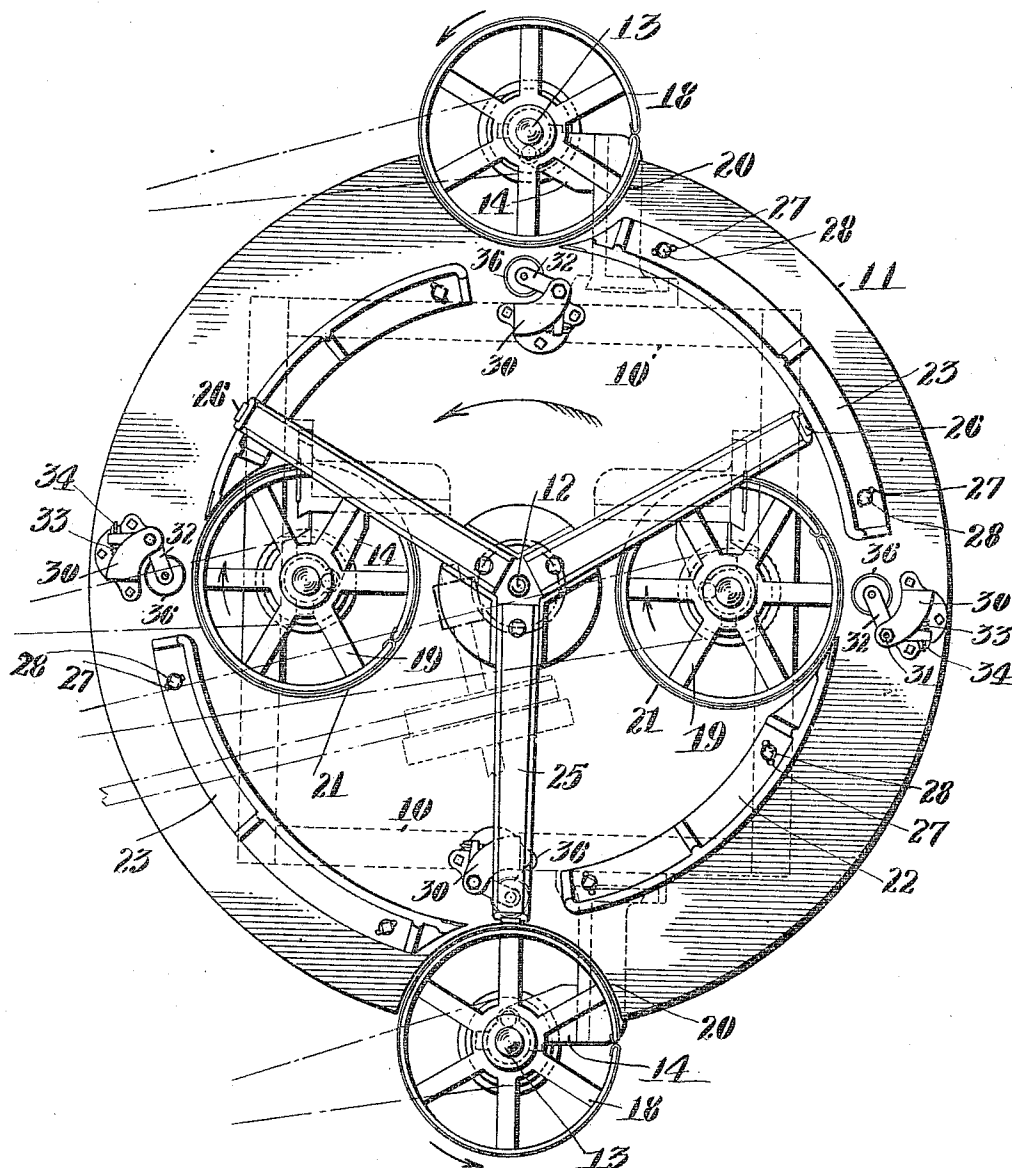


Fig. 5.

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2 SHEETS—SHEET 2.

Fig. 2.

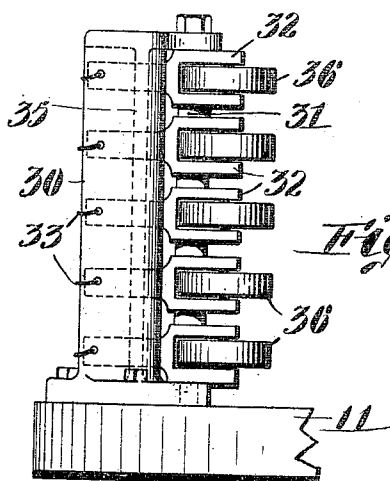
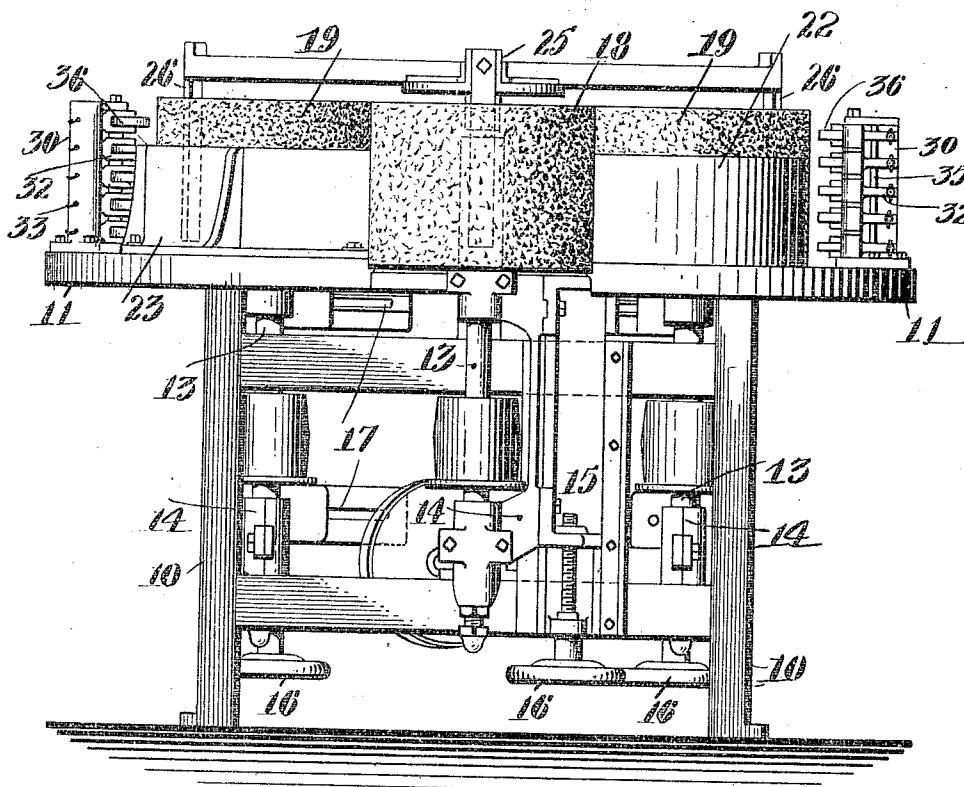


Fig. 3.

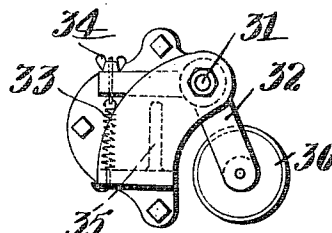


Fig. 4.

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UNITED STATES PATENT OFFICE

THOMAS NICHOLS, OF GARDNER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO L. G. MCKNIGHT, OF GARDNER, MASSACHUSETTS.

SANDING-MACHINE.

957,515.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed June 22, 1908. Serial No. 439,681.

To all whom it may concern:

Be it known that I, THOMAS NICHOLS, a citizen of the United States, residing at Gardner, in the county of Worcester and State of Massachusetts, have invented a new and useful Sanding-Machine, of which the following is a specification.

This invention relates to a machine which is capable of use in many ways, but which is particularly adapted for sanding articles of wood and the like.

The principal objects of the invention are to provide a simple and convenient machine which will occupy very little space and not take excessive power for operating it, capable of being constructed in many different forms, and having provision whereby articles may be fed to sand wheels or other operating devices in such a manner that they can be most efficiently operated upon thereby; also to provide an improved and simplified feeding means especially adapted to feed articles to the sand wheels or the like, supported on edge and capable of feeding not only straight and curved articles, but articles having a double curve or serpentine shape; and to provide means also whereby the sanding or other operation may be performed with equal efficiency on pieces of wood or other material which are of the same thickness throughout, or on those which vary in thickness from one side to the other, either regularly or irregularly.

Another object of the invention is to provide a construction in which the same principles may be carried out with the use of any number of sand wheels, especially one, two, three or four, so that if desired the articles to be operated upon can receive one or more operations on one side and the same or a different number on the other.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which the invention is illustrated as applied to a machine especially adapted for sanding chair-backs and similar articles, and in which—

Figure 1 is a plan of such a machine; Fig. 2 is a side elevation thereof; Fig. 3 is a side elevation on an enlarged scale of a detail; Fig. 4 is a plan of the same, and Fig. 5 is a diagrammatic view of a modification.

The invention is illustrated in a form in which there are two sand wheels for sanding

the inside of the chair-backs or other articles which are fed to it, and two for sanding the outside. It will be understood, however, that one or more of these sand wheels may be omitted or their number increased so that the machine may be used for performing such number of operations as may be necessary.

In the ordinary manufacture of chair-backs the front or concave side is sanded twice, the second sanding operation being of finer character to give a higher finish, while the back is sanded only once. In this case, of course, there will be two sand wheels on the inside, and only one operating on the outside. However, for the purpose of illustrating the invention in a more complete form, it is shown as provided with four sand wheels and will so be described hereinafter.

In the form of the invention shown there is a standard or base 10 carrying at the top thereof a horizontal work supporting table 11. This base has a frame work connected with it, which supports several bearings which will not be described in detail, but which carry a central shaft 12 and a plurality of shafts 13 shown as located in vertical position. It is intended that all these shafts shall be operated from the same source of power, but they may be driven in any desired way, and no particular manner of driving them is shown. It is sufficient that the shaft 12 is driven slowly, and the shafts 13 at a much higher speed. The bearings of each of the shafts 13 are mounted on brackets 14 which are vertically adjusted by means of screws 15 connected with hand-wheels 16, and which may be adjusted laterally by means of bolt and slot connections 17 or in any other convenient manner. Each of these shafts carries a sand wheel 18—19 which may be of any desired construction and which will not be described in detail. These sand wheels project above the table and the latter is preferably provided with openings 20 and 21 for them.

From a consideration of the plan in Fig. 1, it will be seen that the two sand wheels 18 are located near the outside of the table, while the two sand wheels 19 are located at some distance in from the circumference thereof. The purpose of this is to provide for performing the desired operations on both the inside and outside of the work

which is fed along the inside guides 22 and the outside guides 23. The mechanism which is shown herein for feeding the work is of exceedingly simple and efficient character, especially when applied to the sanding of chair-backs and similar articles. It is shown as consisting of a reel 25 mounted on the central shaft 12 so as to rotate at some distance above the table. This reel is provided with a plurality of arms 26 shown as three in the present instance. These arms are preferably adjustable radially on the reel so that the path through which the work travels may be varied when desired. The guides 22 and 23 are similarly adjusted by moving them in and out. For this purpose they are provided with slots 27 and fastened to the table by bolts 28 there-through. It will be seen that from the adjustments of the sand wheels and of the guides and arms, sand wheels of different sizes may be applied to the machine and it may be made to operate for a wide range of work. If desired the arms 26 may be fixed in position on the reel in which case all the adjustment can be made through the devices for adjusting the sand wheel shafts.

The manner in which the arms 26 operate to feed the work is as follows:— Considering them to be rotating in the direction of the long arrow in Fig. 1, the work may be placed on the table on edge and as each arm comes around slowly, one of the pieces or boards to be operated upon is moved up against one of the guides 22 from the edge of the table. When the arm engages the rear of this board it pushes it along against the sand wheel 19. No further control of the work is necessary on the part of the operator, as from here on it is controlled by the machine and taken past the successive wheels. It may be removed from the other side of the machine in an equally simple way, as the work is not positively attached to the arms 26.

In order to hold the work up to the several sand wheels, the table 11 is preferably provided with a standard 30 near each wheel. These standards are preferably located outside the wheels 19 and between the wheels 18 and the center of the table. On this standard there is a vertical shaft 31 on which is pivoted a plurality of arms 32. Each of these arms is independently provided with a spring 33, the tension of which may be adjusted by a thumb-nut or the like 34. Stops 35 are also shown for limiting the motion of the arms in one direction. On the ends of the arms they are individually provided with anti-friction rollers 36. It will be obvious that the tension of the springs is to hold the rollers against the sand wheels, and that the stops 35 prevent actual contact with them, so that the rolls will not be ground in any way by the sand wheels.

These rollers are held under sufficient tension to properly keep the work against the sand wheels as it passes through and they are so located that when the work passes from one sand wheel it engages the next guide which guides it to the next sand wheel. On account of the individual pivoting of these rollers it will be seen that a board or the like which is to be acted upon can be efficiently sanded or otherwise treated in this machine even when it varies in thickness all the way from one edge to the other, or even if the variation is irregular across the board. This is an important point, as it has prevented the successive operation of many types of sanding machines which have been devised heretofore.

The guides 22 and 23 may be omitted if desired, as the arms 26 under certain circumstances will be sufficient to guide the work around the machine, but I prefer to employ the guides as they add to the efficiency and positively prevent the displacement of the work.

Instead of pushing the work through the machine it may be pulled through if desired. This is especially desirable in operating on coffin fronts and such work. In such a case a straight line of motion is sometimes necessary and this may be secured in a similar way to that above described by the use of sprocket wheels 40 and chains 41 in place of the reel 25, as shown in Fig. 5 to feed the work.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications may be made therein by persons skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction shown and described, nor to the particular number of sand wheels illustrated, but

What I do claim is:—

1. In a sanding machine, the combination with a sanding device and a table to support the work, of a rotary arm adapted to move the work along on the table in contact with said sanding device.

2. In a sanding machine, the combination with a plurality of sanding devices arranged with a surface of each located at substantially the same distance from a common center, of a table to support the work, and an arm adapted to rotate about said center to move the work along on the table in contact with the surfaces of said sanding devices.

3. In a sanding machine, the combination of a table and an arm adapted to rotate about an axis for feeding the work along on the table, and sanding devices arranged adjacent to the path of said arm, one of said sanding devices being inside of said path and one being outside of it.

4. In a sanding machine, the combination of a table and a depending arm adapted to rotate about an axis for feeding the work along on the table, and sanding devices arranged adjacent to the path of said arm, a plurality of said sanding devices being inside of the path of said arm and a plurality of said sanding devices being outside said path.

10 5. In a sanding machine, the combination of a work-supporting table, an arm movable over said table and adapted to feed work along the table, and sanding devices arranged on both sides of the path of travel of
15 said arm.

6. In a sanding machine, the combination of a work supporting table, a vertical shaft extending up through the table, a reel on the shaft, an arm supported by said shaft and adapted to move above the table for feeding work on the table, and a sanding device located with a surface adjacent to the path of travel of said arm.

7. In a sanding machine, the combination of a work-supporting table, a shaft extending up through it, a reel carried by said shaft above the table, a plurality of arms supported by said reel and adapted to travel above the table to feed work therealong, a plurality of additional shafts extending up through the table, and a sand wheel on each of the shafts located in position to operate successively on the work fed by said arms.

8. In a sanding machine, the combination of a work-supporting table, a shaft extending up through it, a reel carried by said shaft above the table, a plurality of arms supported by said reel and adapted to travel above the table to feed work therealong, a plurality of additional shafts extending up through the table, a sand wheel on each of said additional shafts located in position to operate successively on the work fed by said arms, and means for vertically adjusting
45 said additional shafts.

9. In a sanding machine, the combination of a work supporting table, a shaft, a reel carried by said shaft above the table, arms supported by said reel and adapted to travel above the table to feed work therealong, a plurality of additional shafts extending up through the table, a sand wheel on each of said additional shafts located in position to operate successively on the work fed by said
55 arms, means for vertically adjusting said additional shafts, and means located under the table for driving all of said shafts.

10. In a sanding machine, the combination of a work-supporting table, a shaft, a reel carried by said shaft above the table, a plurality of arms supported by said reel and adapted to travel above the table to feed work therealong, a plurality of additional shafts, a sand wheel on each of said additional shafts located in position to operate
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successively on the work fed by said arms, means for vertically adjusting said additional shafts, and means for adjusting said additional shafts horizontally, whereby sand wheels of different sizes may be placed thereon and the shafts brought to proper position for engaging the work.

11. In a sanding machine, the combination of a work-supporting table, a shaft, a reel carried by said shaft above the table, an arm supported by said reel and adapted to travel above the table to feed work therealong, an additional shaft, and a sand wheel on the additional shaft located in position to operate on the work fed by said arm, said arm being radially adjustable, whereby the circle in which the work travels may be varied.

12. In a sanding machine, the combination of a table, means for sliding the work along on the table, a series of separated sanding devices on either side of the path of the work, and a series of guides for the work, these guides alternating with the sanding devices and the alternating guides being arranged respectively inside of the pathway of the work and outside of the pathway of the work, whereby the work may be inserted and removed at different points.

13. In a sanding machine, the combination of a table and means for moving the work therealong, a series of sanding devices at different points along the pathway of the work and on either side of the pathway of the work, guides between the sanding devices arranged inside of the pathway at the entrance side of each sanding device and outside of the pathway at the delivery side for the purpose set forth.

14. In a sanding machine, the combination of a sand wheel, and a plurality of rollers located adjacent thereto, each yielding independently of the others, and normally pressing toward the working face of the sand wheel.

15. In a machine of the character described, the combination of a work table, a sand wheel rotatably mounted thereon, a standard near the sand wheel, and a plurality of rollers pivoted on the standard and having springs for pressing them toward the working face of the sand wheel.

16. A device of the character described, comprising a sand wheel, a vertical shaft, a plurality of arms pivoted thereon, individual springs for forcing said arms toward the working face of the sand wheel, and rollers located on the ends of said arms and freely rotatable thereon.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

THOMAS NICHOLS.

Witnesses:

HENRY A. PERKINS,
CATHERINE M. CLANCY.