No. 799,442. PATENTED SEPT. 12, 1905.

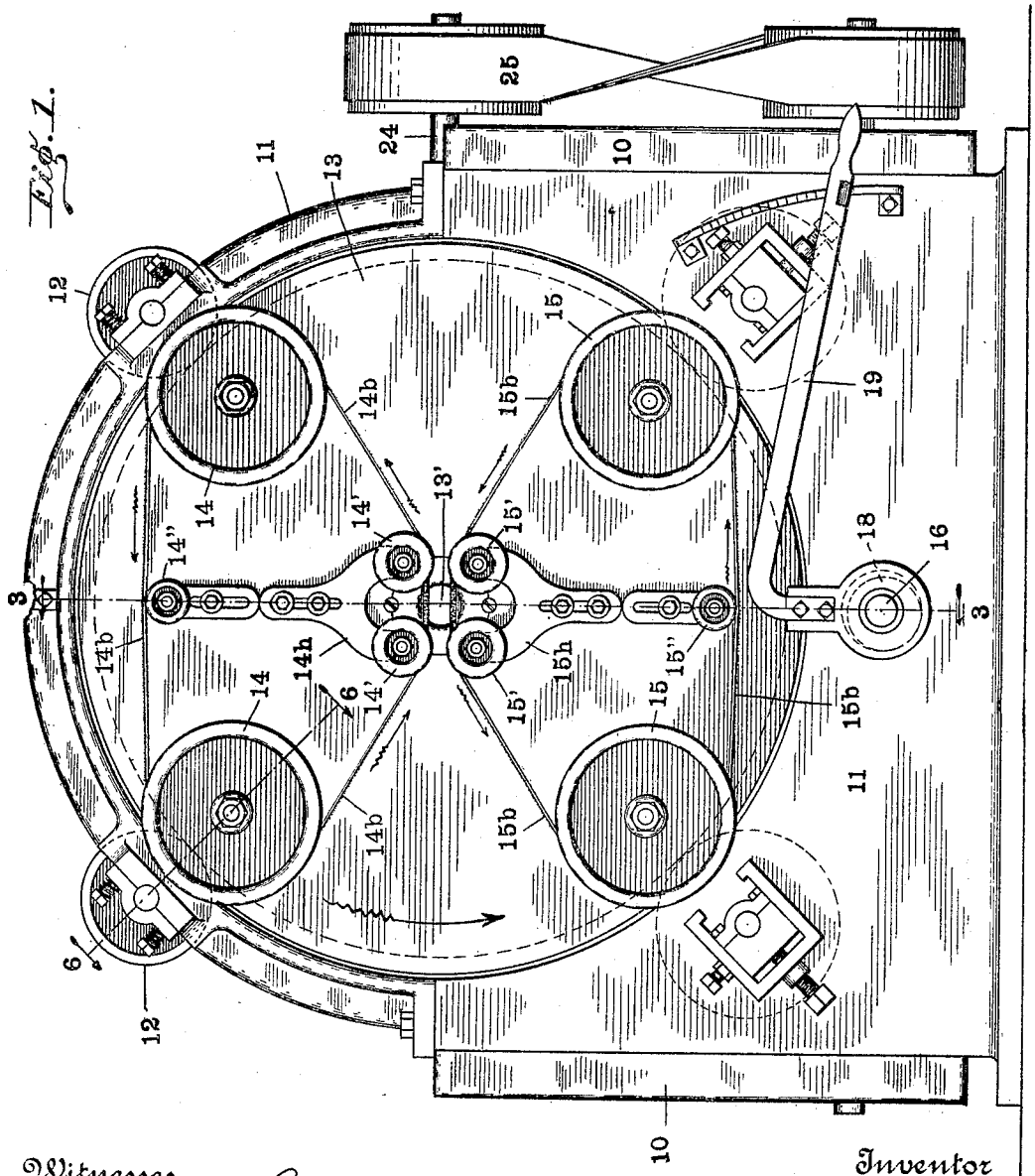
H. L. BORNMAN.

SANDING MACHINE.

APPLICATION FILED SEPT. 28, 1904.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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6 SHEETS—SHEET 2.

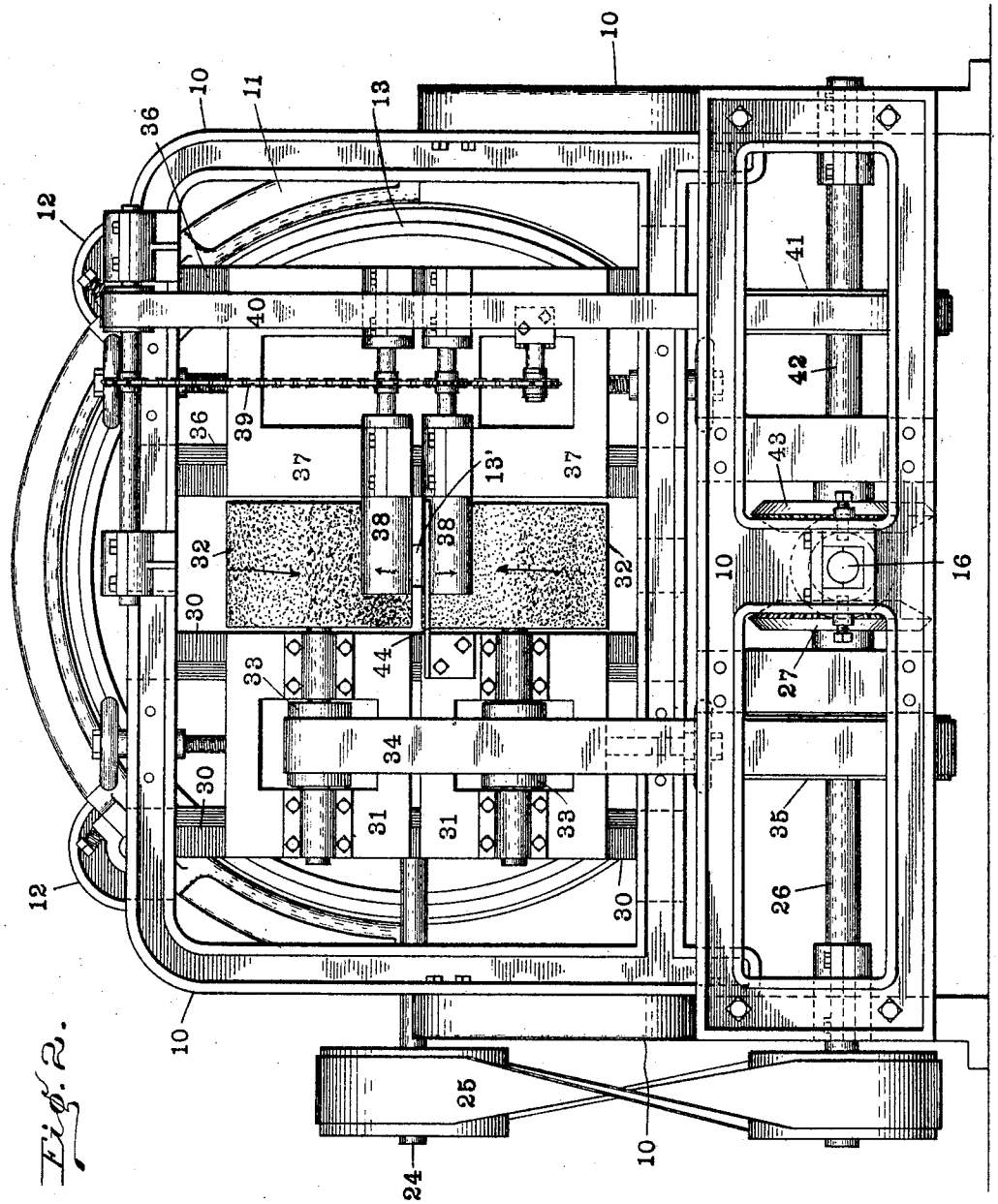


Fig. 2.

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5 SHEETS—SHEET 3.

Fig. 6.

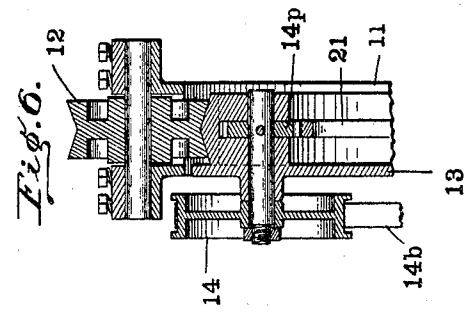


Fig. 5.

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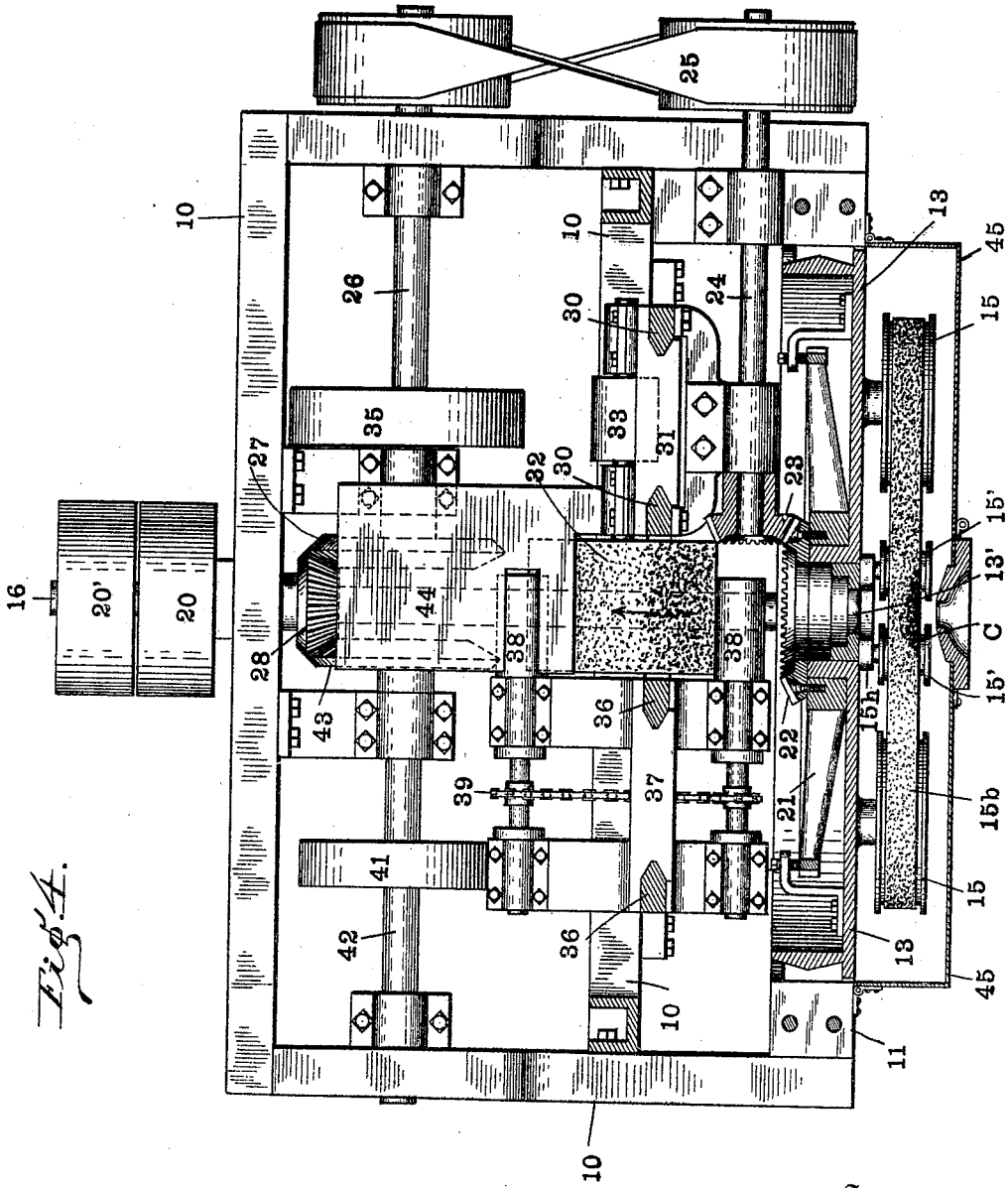


Fig. 4.

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5 SHEETS—SHEET 5.

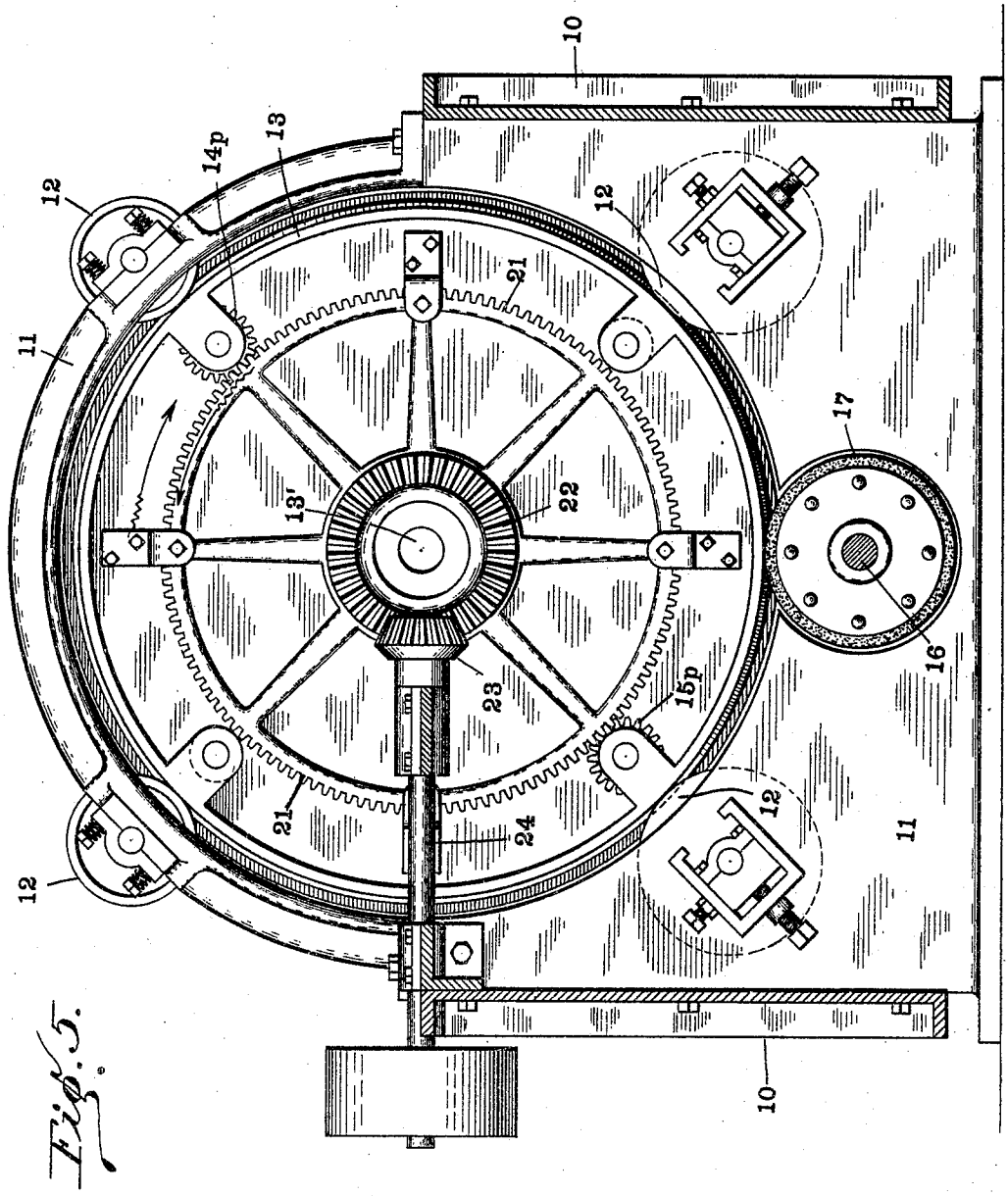


Fig. 5.

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UNITED STATES PATENT OFFICE.

HENRY L. BORNMAN, OF INDIANAPOLIS, INDIANA.

SANDING-MACHINE.

No. 799,442. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed September 28, 1904. Serial No. 226,404.

To all whom it may concern:

Be it known that I, HENRY L. BORNMAN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Sanding-Machines, of which the following is a specification.

The object of my invention is to produce a machine in which cylindrical or other articles may be quickly and uniformly sanded.

The accompanying drawings illustrate my invention.

Figure 1 is a front elevation of a machine embodying my invention, the protecting-cover being omitted. Fig. 2 is a rear elevation of said machine; Fig. 3, a central vertical section on line 3 3 of Fig. 1, with one-half of the protecting-cover shown. Fig. 4 is a horizontal section on line 4 4 of Fig. 3; Fig. 5, a vertical section on line 5 5 of Fig. 3, and Fig. 6 is a section on line 6 6 of Fig. 1.

In the drawings, 10 indicates the main frame, which consists in part of a vertical annular portion 11. Journaled at various points around this annular portion are supporting-rollers 12 12, which are preferably provided with grooved faces, as shown in Fig. 6, in order to receive a revoluble head 13, which is thus freely rotatable within the annulus 11. Journaled upon the front face of head 13 are two pairs of flanged pulleys 14 14 and 15 15, respectively, two pairs of flanged idlers 14′ 14′ and 15′ 15′, respectively, and two tension-idlers 14″ and 15″, all of said wheels and idlers lying in substantially the same plane and parallel with the front face of the head 13. The two pairs of idlers 14′ and 15′ are arranged near the center of the head, and passing around each set of rollers and idlers is a sanding-belt 14^b and 15^b, respectively, the arrangement of the idlers 14′ and 15′ being such that the sanding-belts will pass adjacent the central perforation 13′ of the head 13, substantially tangent thereto. The idlers 14′ and 15′ have peripheries, which are slightly coned at their outer ends, as shown at C in Figs. 3 and 4, in order that the sanding-belts as they pass the opening 13′ may have their outer edges flared away from each other, in order to facilitate the entrance of the article to be sanded. The rollers 14′ and 15′ are carried, respectively, by adjustable holders 14^h and 15^h, respectively, by means of which their relation to the central opening 13′ may be varied to bring the sanding-belts into proper position, and the idlers 14″ are also carried by adjustable holders to take up the slack in the sanding-belts.

Journaled in suitable bearings carried by the main frame substantially parallel with the axis of head 13 is a shaft 16, which carries near its forward end a friction-roller 17, adapted to engage the periphery of the head 13. Shaft 16 is carried at its forward end in an eccentric 18, journaled in the main frame, but provided with a suitable operating-handle 19, by means of which the friction-wheel 17 may be thrown into or out of engagement with the periphery of head 13. The shaft 16 in the present machine is the main drive-shaft and is provided at one end with a suitable tight pulley 20 and loose pulley 20′.

Journaled on the hub of head 13 on the rear side of said head is a gear 21, with which mesh pinions 14^p and 15^p, which are carried, respectively, by the shafts of one of the pairs of pulleys 14 and one of the pairs of pulleys 15. Gear 21 is provided with a bevel-gear 22, which in turn meshes with a pinion 23, carried by a shaft 24, connected by suitable pulleys and belt 25 to a shaft 26, carrying a gear 27, which gear meshes with gear 28, carried by the main shaft 16.

Mounted to the rear of the annulus 11 is a vertical guide-frame 30, carried by the main frame parallel with head 13. Vertically adjustable upon this guide-frame are two sand-roller carriers 31 31, in each of which is journaled a sand-roller 32, the shafts of said sand-rollers each carrying a pulley 33, driven by a belt 34, which passes over a pulley 35, carried by the shaft 26. The guide-frame 30 lies upon one side of the axis of head 13, and upon the opposite side is arranged a similar guide 36, upon which are vertically adjustable two feed-roller-carrying frames 37 37, in each of which is journaled a pair of feed-rollers 38 38, the axes of which are parallel with the axes of the sanding-rollers 32, one pair being arranged above and the other pair below the axis of the head 13. The feed-rollers 38 are driven by means of a suitable chain or belt 39, which in turn is driven by a belt 40, passing over the pulley 41, carried by the shaft 42, which shaft is journaled in the main frame and provided with a gear 43, which meshes with the gear 28. The lower feed-roller frame 37 carries a suitable receiving-table 44, upon which the finished material will be discharged.

Inclosing the sanding-belts and parts carried by the face of head 13 is a suitable two-part

cover 45, each part of which is hinged upon a vertical axis at the outer edge in order that the parts may be swung out to permit free access to the sanding-belts and parts carrying the same.

In operation if a substantially cylindrical object is to be sanded, which, however, may vary in diameter at different points in its length, the operator throws lever 19 up until it brings the friction-pulley 17 into engagement with the periphery of head 13, and thus causes said head to rotate in the direction indicated by the arrows. At the same time gear 21 is rotated in the direction indicated by the arrows, thus driving the sanding-belts 14^b and 15^b in the directions indicated by the arrows and carrying said belts bodily around the axis of the opening 13′. If, now, the article to be sanded is inserted between that portion of the sanding-belts which is traveling between the idlers 14′ and 15′, the said belts will yield to permit the insertion of the article and will engage every portion of said article and sand it thoroughly, the article being moved in between the belts and then withdrawn toward the front. If, on the other hand, an article is to be sanded having a pair of opposite parallel faces with connecting sides which are more or less rounded, the head 13 is brought to a position at right angles to the position shown in Fig. 1, so that those portions of the sanding-belts which lie between the two pairs of rollers 14′ and 15′ are substantially parallel with the more or less rounded sides of the article to be sanded. The belts 34 and 40 are then thrown onto their pulleys, so that the sanding-rollers 32 and feed-rollers 38 will be rotated in the directions indicated by the arrows. The friction-roller 17 is withdrawn from the periphery of head 13, so that the head 13 will remain stationary, while the sanding-belts will continue their movement because of the independent rotation of the gear 21 upon the head 13. The article is then inserted with the flat faces horizontal, and as the article passes between the sanding-belts the more or less rounded sides are sanded thereby. The article is then caught between the forward pair of feed-rollers 38 and driven by them between the sanding-rollers 32 and delivered to the rear feed-rollers 38 and discharged by them onto the table 44. If very long substantially cylindrical articles are to be sanded, the sanding-rollers 32 may be thrown away from the center and the belt 34 thrown off of its pulleys, while the feed-rollers 38 may then be used to draw the long article through between the sanding-belts, the head 13 in such cases being rotated, as previously described.

I claim as my invention—

1. In a sanding-machine, the combination, with a rotatable head, and means for rotating the same at will, of an endless sanding-belt carried by said rotatable head with its operating-face arranged in a plane at an angle to the plane of the head, and means for independently driving said belt.

2. In a sanding-machine, the combination, with a rotatable head, and means for rotating the same at will, of a pair of endless sanding-belts mounted on said head with their operating-faces each in a plane at an angle to the plane of the head and having suitable supports whereby said operating-faces of the belts may be caused to travel adjacent the center of the head in a tangential position to the axis thereof, and means for driving said belts independent of the rotation of the head.

3. In a sanding-machine, the combination, with a rotatable head, of a planetary sanding device carried by said head, means for rotating the head, and means for independently rotating said sanding device.

4. In a sanding-machine, the combination, with a rotatable head, and means for rotating the same, of a pair of planetary sanding devices carried by said head one upon each side of the axis thereof, and means for independently rotating said planetary sanding devices.

5. In a sanding-machine, the combination, with a rotatable head, and means for rotating the same at will, of an endless sanding-belt carried by said rotatable head with its operating-face arranged in a plane at an angle to the plane of the head, means for independently driving said belt, feeding means arranged behind said head, and a second sanding means arranged to engage portions of the article.

6. In a sanding-machine, the combination, with a rotatable head and means for rotating the same at will, of a pair of endless sanding-belts mounted on said head with their operating-faces each in a plane at an angle to the plane of the head and having suitable supports whereby said operating-faces of the belts may be caused to travel adjacent the center of the head in a tangential position to the axis thereof, means for independently driving said belts independent of the rotation of the head, feeding means arranged behind said head, and a second sanding means arranged to engage portions of the article.

7. In a sanding-machine, the combination, with a rotatable head and means for rotating the same, of a planetary sanding device carried by said head, means for independently rotating said sanding device, feeding means arranged behind said head, and a second sanding means arranged to engage portions of the article.

8. In a sanding-machine, the combination, with a rotatable head, and means for rotating the same, of a pair of planetary sanding devices carried by said head one upon each side of the axis thereof, means for independently rotating said planetary sanding devices, feeding means arranged behind said head, and a second sanding means arranged to engage portions of the article.

9. In a sanding-machine, the combination,

with a rotatable head, and means for rotating the same at will, of an endless sanding-belt carried by said rotatable head with its operating-face arranged in a plane at an angle to the plane of the head, means for independently driving said belt, a pair of sanding-rollers arranged behind said head one upon each side of the axis thereof, and means for feeding material between said pair of sanding-rollers.

10. In a sanding-machine, the combination, with a rotatable head, and means for rotating the same at will, of a pair of endless sanding-belts mounted on said head with their operating-faces each in a plane at an angle to the plane of the head and having suitable supports whereby said operating-faces of the belts may be caused to travel adjacent the center of the head in a tangential position to the axis thereof, means for independently driving said belts independent of the rotation of the head, a pair of sanding-rollers arranged behind said head one upon each side of the axis thereof, and means for feeding material between said pair of sanding-rollers.

11. In a sanding-machine, the combination, with a rotatable head, of a planetary sanding device carried by said head, means for rotating said sanding device, means for independently rotating the head, a pair of sanding-rollers arranged behind said head one upon each side of the axis thereof, and means for feeding material between said pair of sanding-rollers.

12. In a sanding-machine, the combination, with a rotatable head, and means for rotating the same, of a pair of planetary sanding devices carried by said head one upon each side of the axis thereof, means for independently rotating said planetary sanding devices, a pair of sanding-rollers arranged behind said head one upon each side of the axis thereof, and means for feeding material between said pair of sanding-rollers.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 23d day of September, A. D. 1904.

HENRY L. BORNMAN. [L. S.]

Witnesses:

ARTHUR M. HOOD,

JAMES A. WALSH.