

J. B. HORRELL & A. S. BRYANT.
MACHINE FOR BRUSHING AND POLISHING FRUIT AND OTHER OBJECTS.

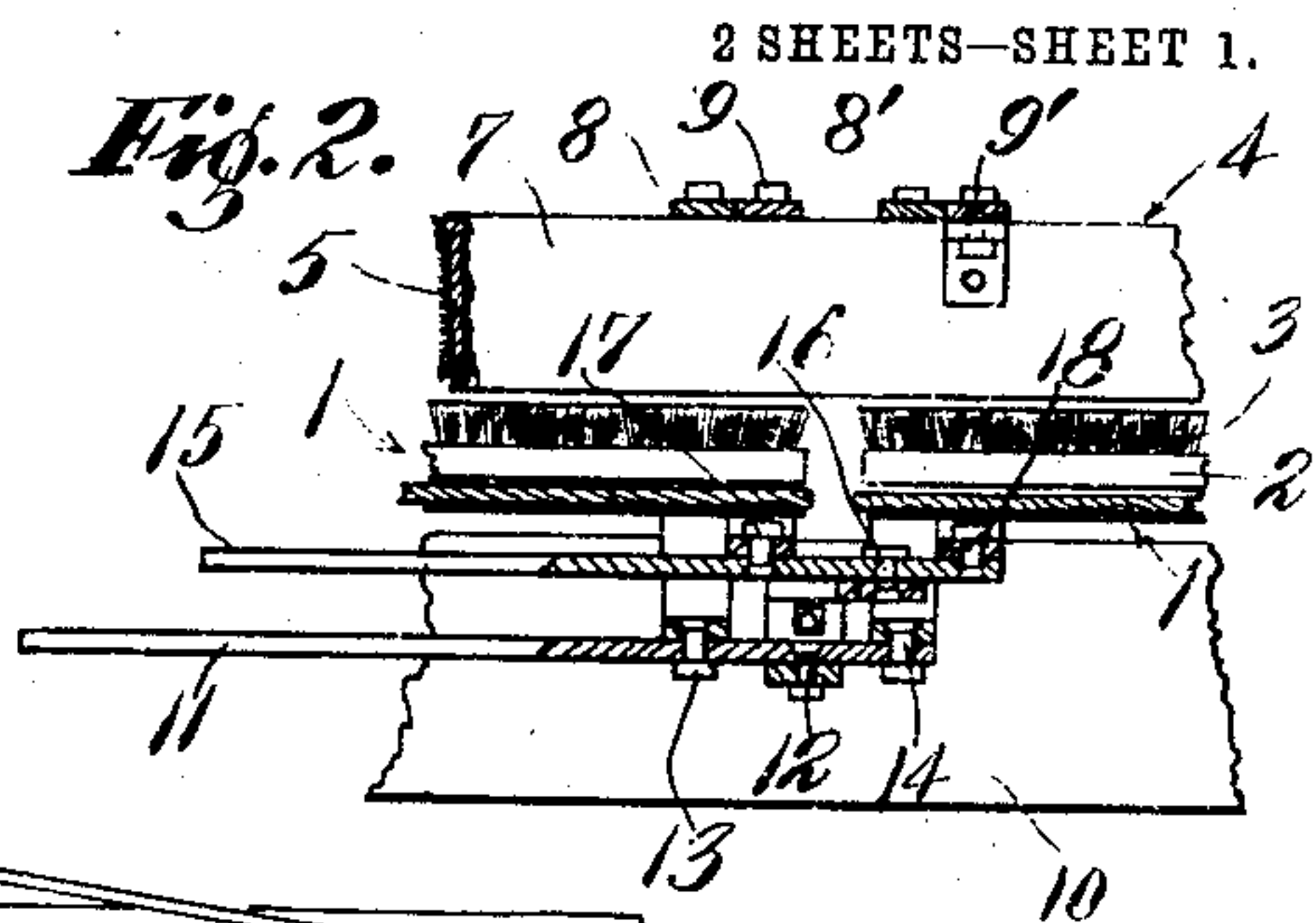
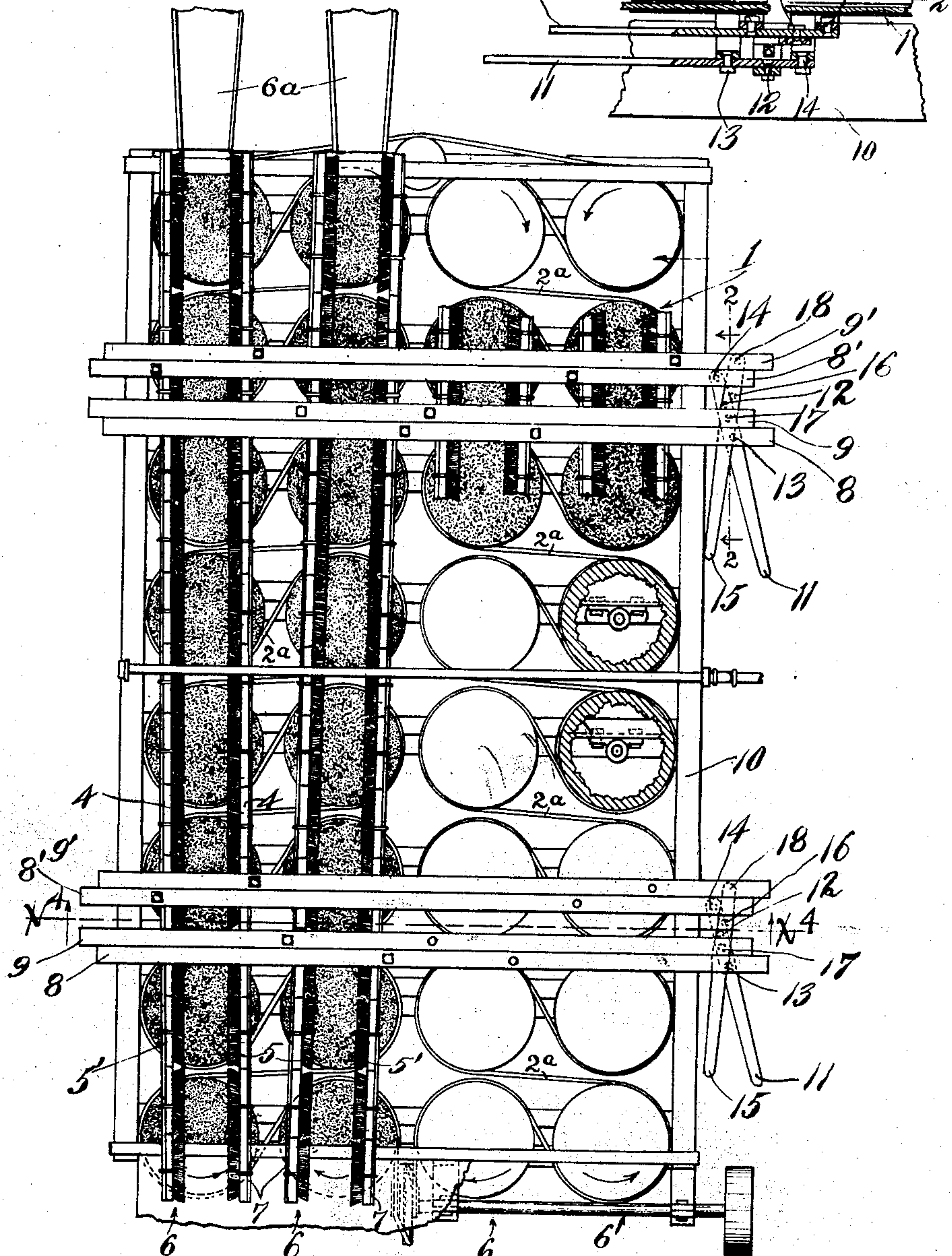
APPLICATION FILED JUNE 11, 1906, RENEWED MAY 11, 1908.

944,993.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
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Inventors
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2 SHEETS—SHEET 2.

Fig. 3.

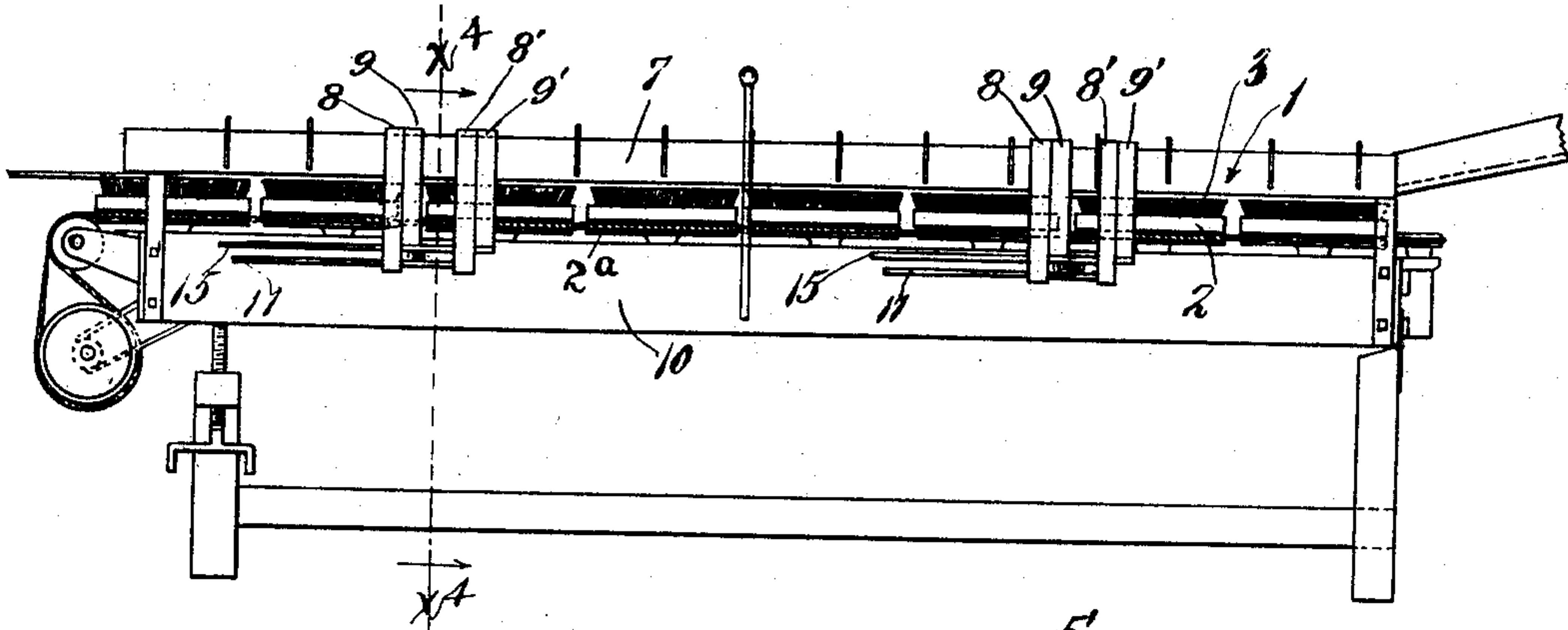


Fig. 4.

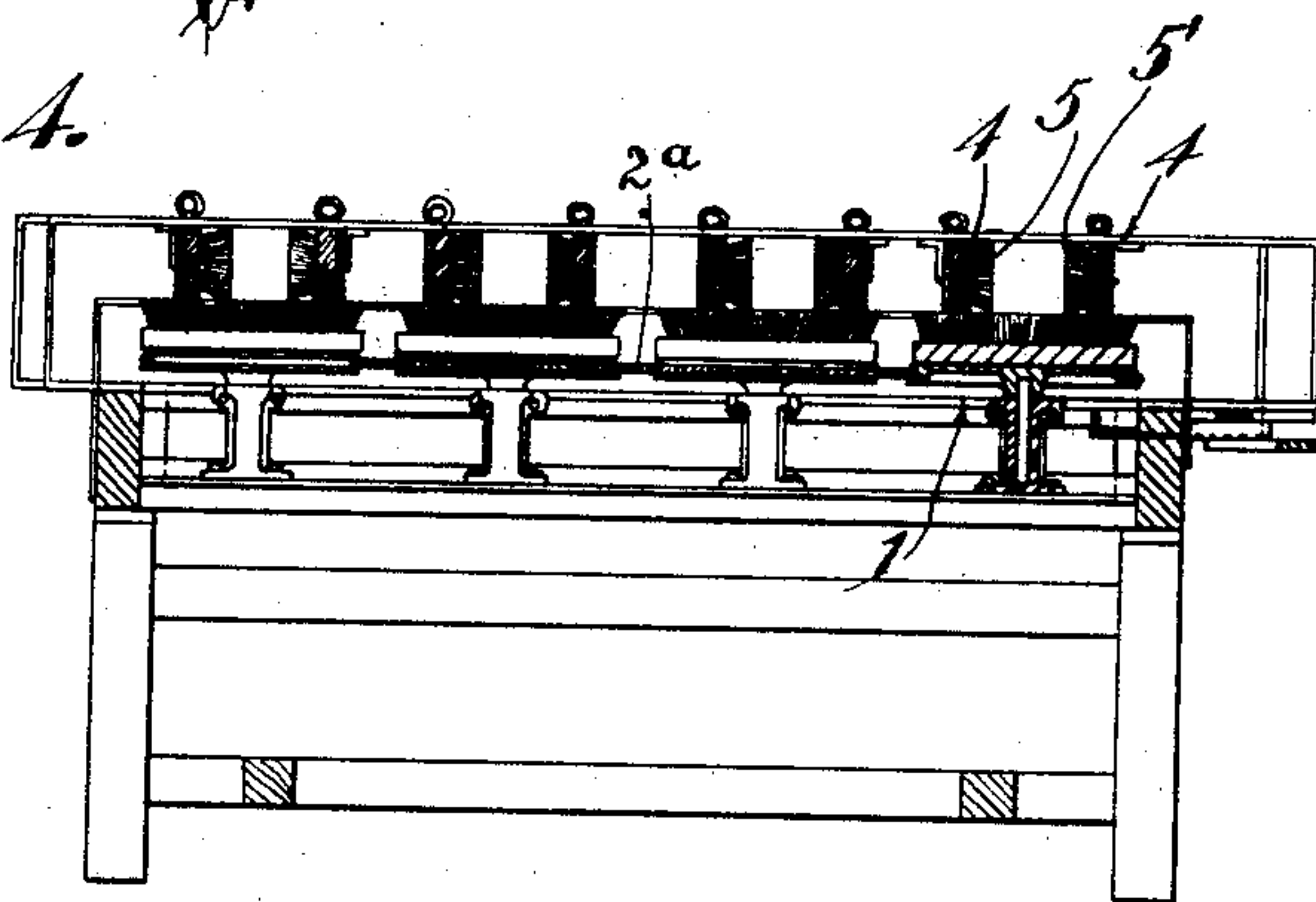


Fig. 5.

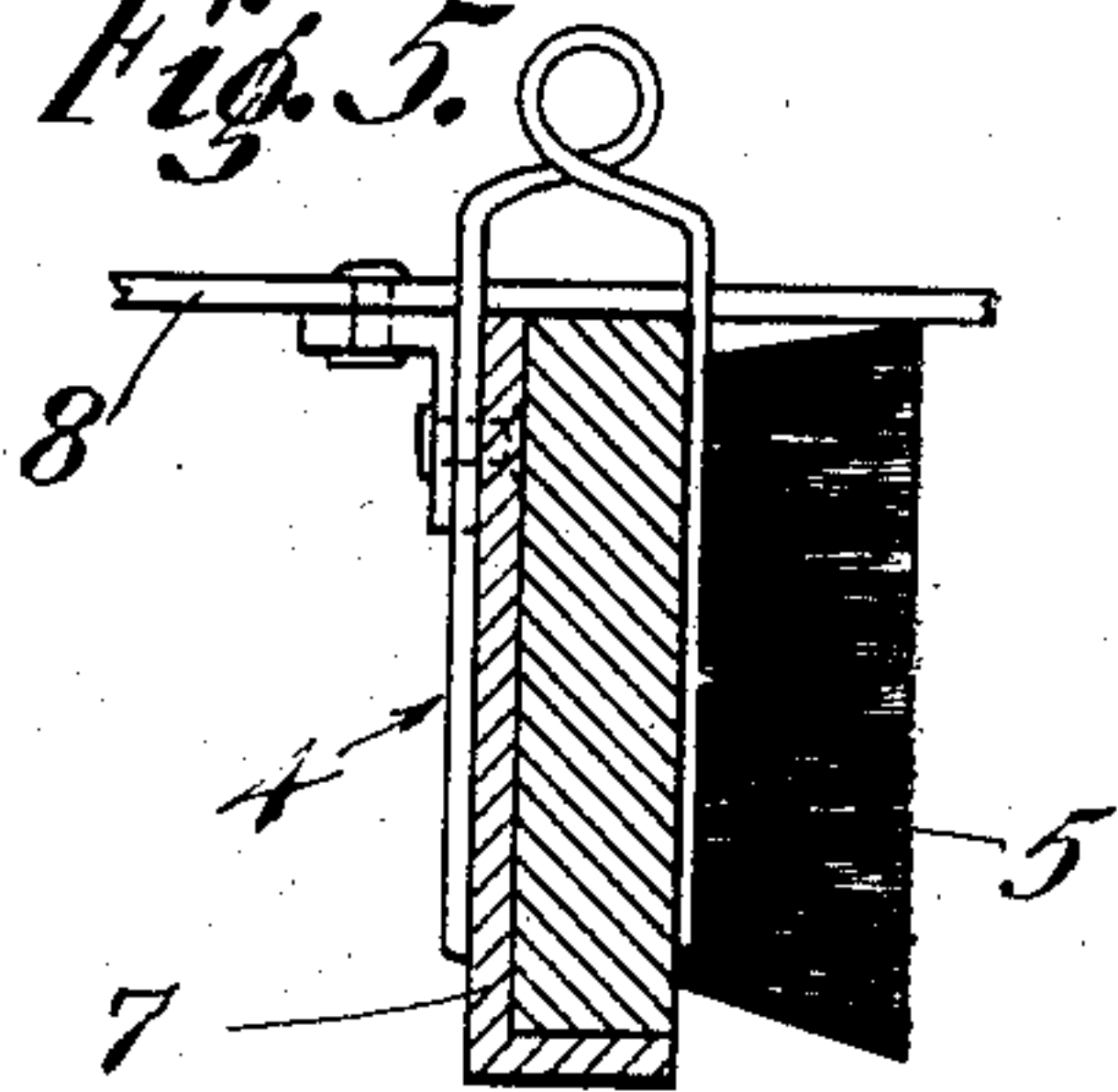
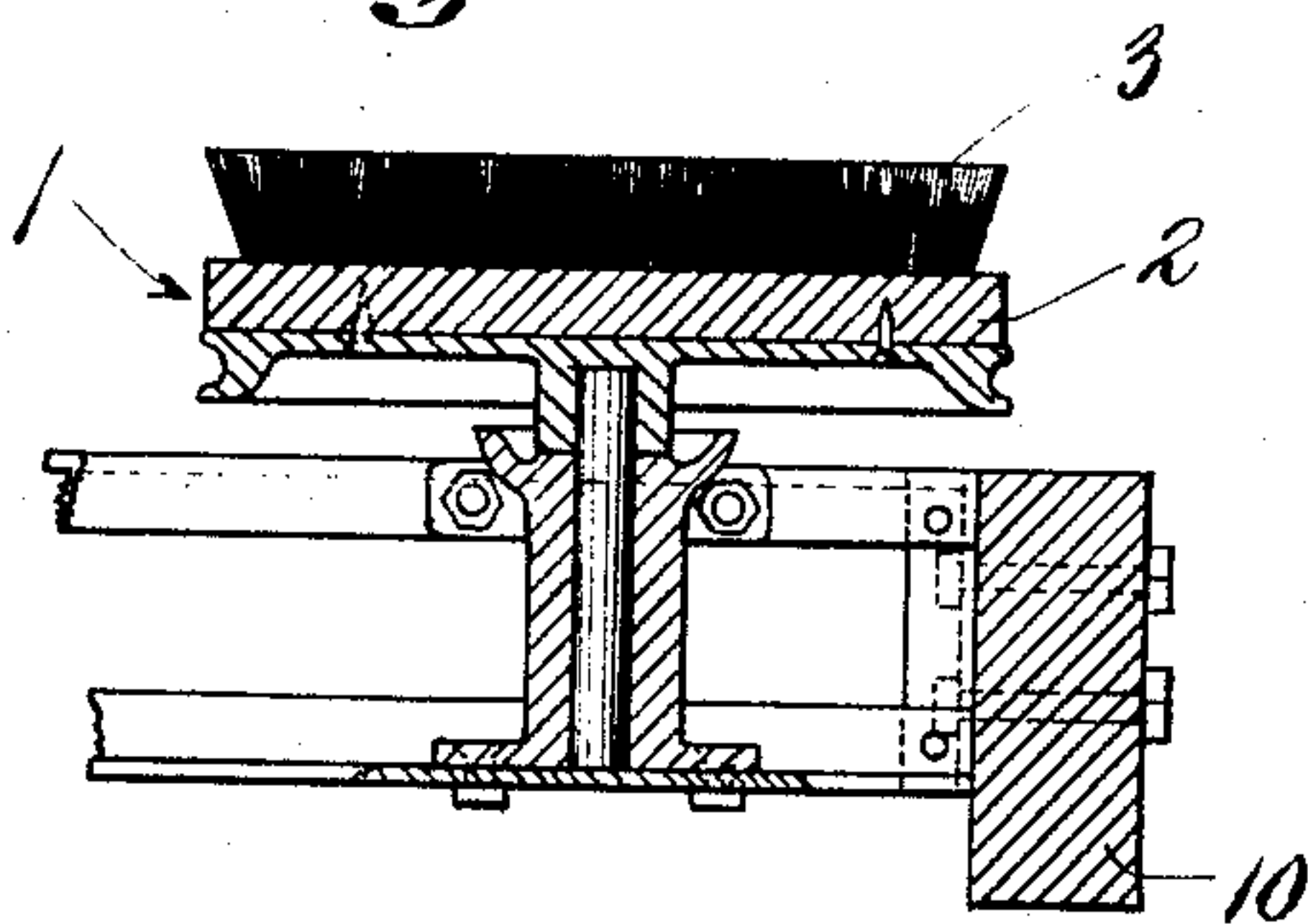


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN B. HORRELL AND ARTHUR S. BRYANT, OF SANTA PAULA, CALIFORNIA, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO H. K. MILLER MANFG. CO., OF GLENDORA, CALIFORNIA, A CORPORATION OF CALIFORNIA.

MACHINE FOR BRUSHING AND POLISHING FRUIT AND OTHER OBJECTS.

944,993.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed June 11, 1906, Serial No. 321,272. Renewed May 11, 1908. Serial No. 432,319.

To all whom it may concern:

Be it known that we, JOHN B. HORRELL and ARTHUR S. BRYANT, both citizens of the United States, residing at Santa Paula, in the county of Ventura and State of California, have invented a new and useful Machine for Brushing and Polishing Fruit and other Objects, of which the following is a specification.

This invention relates to machines or apparatus for cleaning, brushing and polishing fruit and other objects; and the invention has for its object the provision of improved means or apparatus of the nature set forth which will be relatively inexpensive and simple in construction, positive and economical in operation, convenient in use and control, and generally superior in point of efficiency and serviceability.

The invention has for its specific object the provision of an improved machine or apparatus of the character described, whereby scale, dirt, or other blemishes or foreign substances and accumulations may be removed from oranges and other fruit.

In carrying out the invention, we provide a rotary abrasive element operative substantially in a horizontal plane and other opposed abrasive elements combined with the rotary element and spaced apart to form a chute or runway which may be traversed by fruit or other objects, subject to the abrasive action of the rotary and other elements. The abrasive elements which are associated with the rotary element have straight upright abrasive surfaces facing each other; and they are preferably arranged in rows of predetermined extent, a plurality of the rotary abrasive elements being arranged beneath the same. The horizontal elements are rotatable upon vertical axes; and the rows of upright brushes have abrasive surfaces arranged in common planes, in the respective rows. The abrasive surfaces of the rotary elements comprise a brushing or abrading floor rotating beneath the upright brushes, the latter being preferably adjustable toward and from each other and with respect to the axes of rotation of the rotary elements.

Means are employed for operating the rotary elements, and also for adjusting the rows of upright brushes, permitting adjustment of the runways between the upright rows with respect to the axes of rotation of

the horizontal brushes. Preferably, it is desirable to provide and embody in one machine, a plurality of series of horizontal brushes with their associated rows of upright brushes, providing a plurality of chutes or runways, all of the horizontal rotary brushes being jointly driven from a common source of power. To the latter end, belt or rope transmission may be conveniently employed, as shown in the drawings.

As a convenient means of differentiation, the upright wall brushes may be designated as longitudinal brushes, and the horizontal rotary brushes may be designated as disk brushes. In providing a series of disk brushes, the fruit or other object is passed through the runway successively across the rotating disk brushes, which may be oppositely rotated, the fruit or other object being given a twirling or twisting movement in its path to and from the axis of rotation of each disk brush. Each part of the surface is thus brought into frictional contact with the brushing or abrading surfaces, resulting in thorough cleaning and brushing.

The invention consists in the novel provision and construction of features and parts hereinafter described, disclosed in the drawings and finally pointed out in claims:—

In the drawings:—Figure 1 is a fragmentary plan view of means or apparatus embodying the invention, parts being omitted and shown in section for clearness of illustration; Fig. 2 is a detail sectional view, taken upon the line 2—2, Fig. 1; Fig. 3 is a side elevation of the means or apparatus shown in Fig. 1, upon a reduced scale; Fig. 4 is a transverse sectional view, taken upon the line x^4 — x^4 , Fig. 1, and looking in the direction of the appended arrows; the showing being partly in section; Fig. 5 is a transverse sectional view of one of the upright brush walls; and Fig. 6 is a detail sectional view of one of the horizontal rotary brushes and the associated parts and features. Figs. 5 and 6 are upon an enlarged scale.

Corresponding parts in all the figures are designated by the same reference characters.

Referring with particularity to the drawings, 1 designates disk brushes each comprising a body 2 having a brush surface 3 forming the floor of a chute, the side walls of which are formed of bodies 4 having brush surfaces 5, 5', which face each other

and extend across the top of the rotary brush 1. Preferably, the rotary brushes 1 are arranged in rows 6 of desirable length, the brushes being placed close enough together to prevent objects from falling between the rotary disk brushes as they pass down the chute formed by a row of rotary brushes and the transversely-arranged brushes 5, 5'. Desirably, the transversely-arranged brushes 5, 5', are detachably mounted on bars 7 which are carried by adjusting frames 8, 8', 9, 9', transversely of the machine and of said bars and chutes, and are adapted to shift the wall brushes 5, 5', of each chute independently of each other, so that the chute may be increased and decreased in width, and the way or opening thereof between the wall brushes may be shifted with relation to the axis of rotation of any or all of the rotary brushes to which the chute pertains.

In Fig. 1 the wall brushes form two chutes, each having eight rotary brushes to form its floor, and the machine shown is adapted to employ two other rows of rotary brushes, one of which rows is shown, and the bodies of the brushes of the other row are shown devoid of their brush surfaces, the parts also being sectioned to show construction.

10 is the frame of the machine.

11 is a shifting lever pivoted by a pivot 12 to the frame 10, and by pivots 13, 14, to the shifting frames 8, 8', respectively.

15 is a shifting lever pivoted by a pivot 16 to the frame 10, and by pivots 17, 18, to the shifting frames 9, 9'.

From the description it will appear that as the fruit is fed into the runways formed by the revolving brushes and the brush walls, the fruit is alternately acted upon by the brush surfaces and cleansed of all scale and dirt which is usually found on fruits. The rotation of the disk brushes operates to impart a forward travel to the fruit over the same by centrifugal force which could not be otherwise obtained were it not for the fact that the walls are capable of being shifted beyond the point of center of said disks or disk brushes, whereby the fruit is projected forwardly irrespective of the fact that the runways are on an incline. The inclination of the runway is immaterial since it is obvious that the action of the brushes is sufficient to propel the fruit forward until discharged at the outlet.

The straight parallel bars 7 and brushes 5, 5', carried thereby, form open ended runways extending across and terminating at the extremities of the abrasive floor comprising the brushes 3. Disks 2 are provided on the opposite side brushes 3, having means for rotation thereof, which may comprise, as shown a continuous rope drive 2^a. At the end of each longitudinal runway is provided

a discharge opening or chute 6^a; and the fruit or other objects traverse the runways to said discharge openings in the directions indicated by the arrows adjacent to the rows 6 in Fig. 1.

The operation, method of use and advantages of the improvements constituting the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings and the following statement:—Any prime mover or source of power may be utilized to energize the rope drive 2^a, causing rotation of the horizontal floor brushes or disk brushes 1. The fruit is fed to the runways between adjacent rows 6 of the upright or wall brushes, and in said runways violently agitated simultaneously with its propulsion longitudinally of the respective runway, resulting in subjection to effective treatment by the rotary horizontal and fixed upright brushes. The fruit or other objects finally emerge through the discharge openings or chutes 6^a in thoroughly cleansed and polished condition. By means of the shifting levers 11 and 15 the shifting frames 8 and 8' and 9 and 9' may be manipulated to vary the positions of the rows of upright wall brushes, with respect to the vertical axes of the horizontal disk brushes 1. The courses taken by the fruit or other objects through the runways, may thus be varied, and the nature of the abrasive action of the brushes thereon altered as required.

What we claim and desire to secure by Letters-Patent of the United States is:—

1. Mechanism of the character described, comprising a rotary abrasive element operative substantially in a horizontal plane; and other opposed abrasive elements combined with said rotary abrasive element and spaced apart to form a runway extending in a chord of an arc over said rotary abrasive element whereby objects may traverse said rotary abrasive element subject to abrasive action of the entirety.

2. Mechanism of the character described, comprising a plurality of rotary abrasive elements operative substantially in a horizontal plane; and other abrasive elements having upright straight opposed abrasive surfaces arranged to form a runway extending in a chord of an arc over said rotary abrasive elements whereby objects may traverse said rotary abrasive elements subject to abrasive action of the entirety.

3. A fruit cleaner comprising a disk having a brush upon one face, guides above said face terminating on opposite sides thereof to form an open-ended runway across said brush, and means for rotating said disk.

4. A fruit cleaner comprising a disk having a brush upon one face, means for rotating said disk the same being arranged under-

neath the disk opposite the brush face to leave said face unobstructed, and guides forming an open-ended runway across said brush.

5 5. A fruit cleaner comprising a disk having a brush upon its upper face, means for rotating said disk consisting of a shaft projecting solely from the lower face of said disk opposite said brush, and guides forming an open-ended runway across said brush.

10 6. A fruit cleaner comprising a disk arranged to rotate in a horizontal plane and having a brush upon its flat upper surface, two parallel straight brushes supported transversely above said brush and terminating on opposite sides thereof to form an open-ended runway thereacross, and means for rotating said brush, said means leaving the space above the brush unobstructed.

20 7. A fruit cleaner comprising a row of disks having brushes upon their flat surfaces arranged to form a floor, two parallel straight brushes forming a runway across said floor and terminating in a discharge opening at one end, and means for rotating said disks, said means being below the level of the brush faces and leaving said way unobstructed.

30 8. A fruit cleaner comprising a disk having a brush upon one face, means for rotating said disk, guides forming a runway across said disk, said runway having an open end adapted to continuously discharge fruit, and means for shifting said runway laterally to vary its position with relation to the axis of the disk.

40 9. A fruit cleaner comprising a row of disks having brushes upon their flat surfaces arranged to form a floor, two parallel straight brushes forming a runway across said floor and terminating in a discharge

opening at one end, means for rotating said brushes, and means for shifting said runway laterally to vary its position with relation to the axes of said disks.

45 10. A machine for brushing and polishing fruit, comprising a frame, brushes rotatable on a vertical axis provided with a flat upper brush surface and arranged in one or more rows, wall brushes having upright brush surfaces and arranged to form runways for said rows, respectively, adjusting frames to shift the wall brushes, and levers pivotally connected to the frame of the machine and to said adjusting frames, substantially as and 55 for the purpose set forth.

11. A machine for brushing and polishing fruit, comprising a frame, rotary brushes arranged in a row, each being rotatable on a vertical axis and provided with an upper brush surface and wall brushes having upright straight brush surfaces and arranged to form a runway for such row.

12. Mechanism of the character described, comprising a disk brush, means for rotating said disk brush, an adjustable abrasive runway transverse of said disk brush, and means for shifting the walls of said runway.

13. Mechanism of the character described, comprising a disk brush, means for rotating said disk brush, an adjustable abrasive runway having opposed abrasive surfaces and extending transversely of said disk brush, and means for shifting said runway.

In testimony whereof, we have hereunto set our hands at Santa Paula, California, this 30th day of May 1906.

JOHN B. HORRELL.
ARTHUR S. BRYANT.

In presence of—

C. C. TEAGUE,
F. K. TITUS.