

T. ALLSOP & W. W. SIBSON.

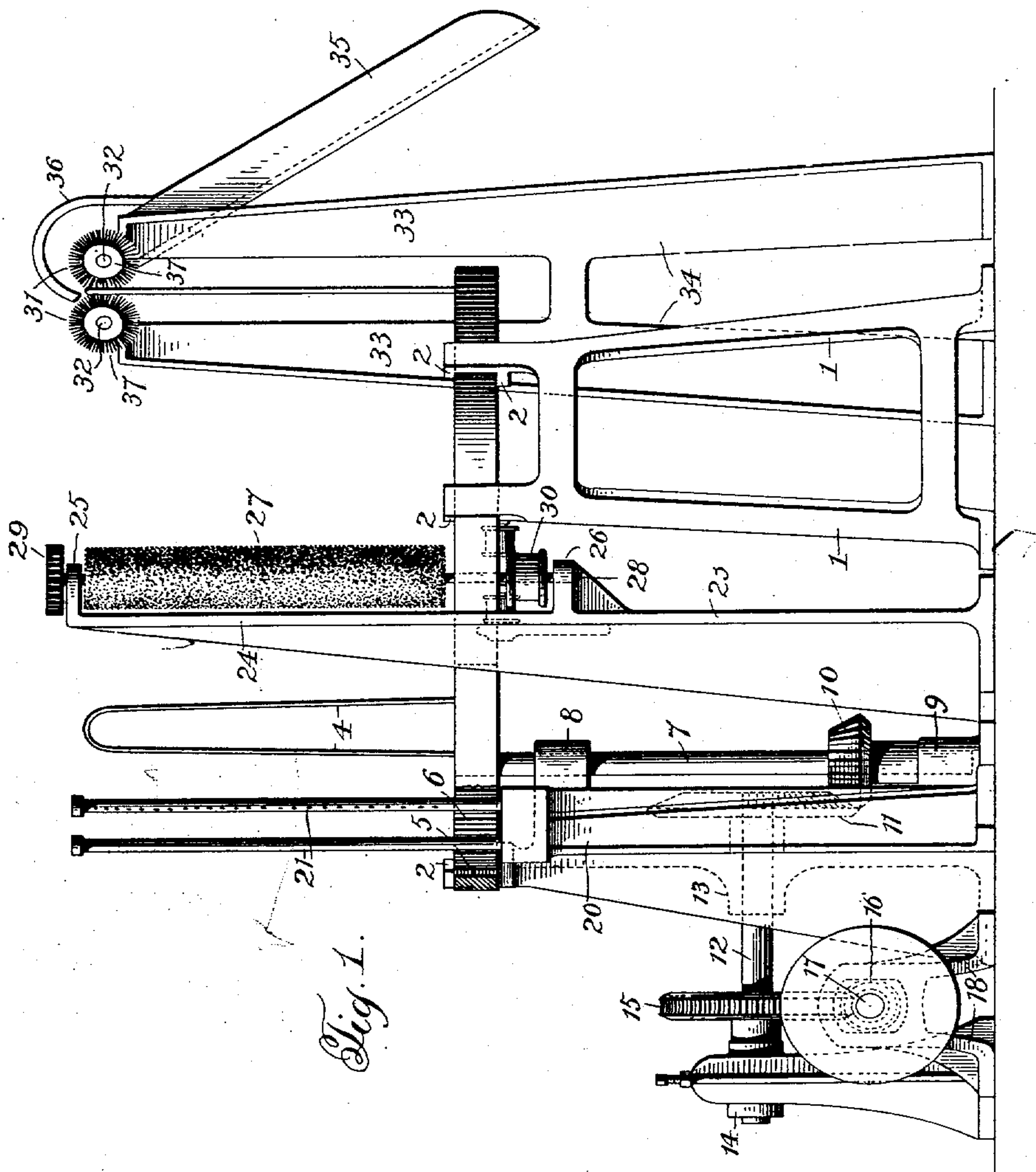
SINGEING MACHINE.

APPLICATION FILED MAR. 14, 1908.

919,999.

Patented Apr. 27, 1909.

4 SHEETS—SHEET 1.



Witnesses:

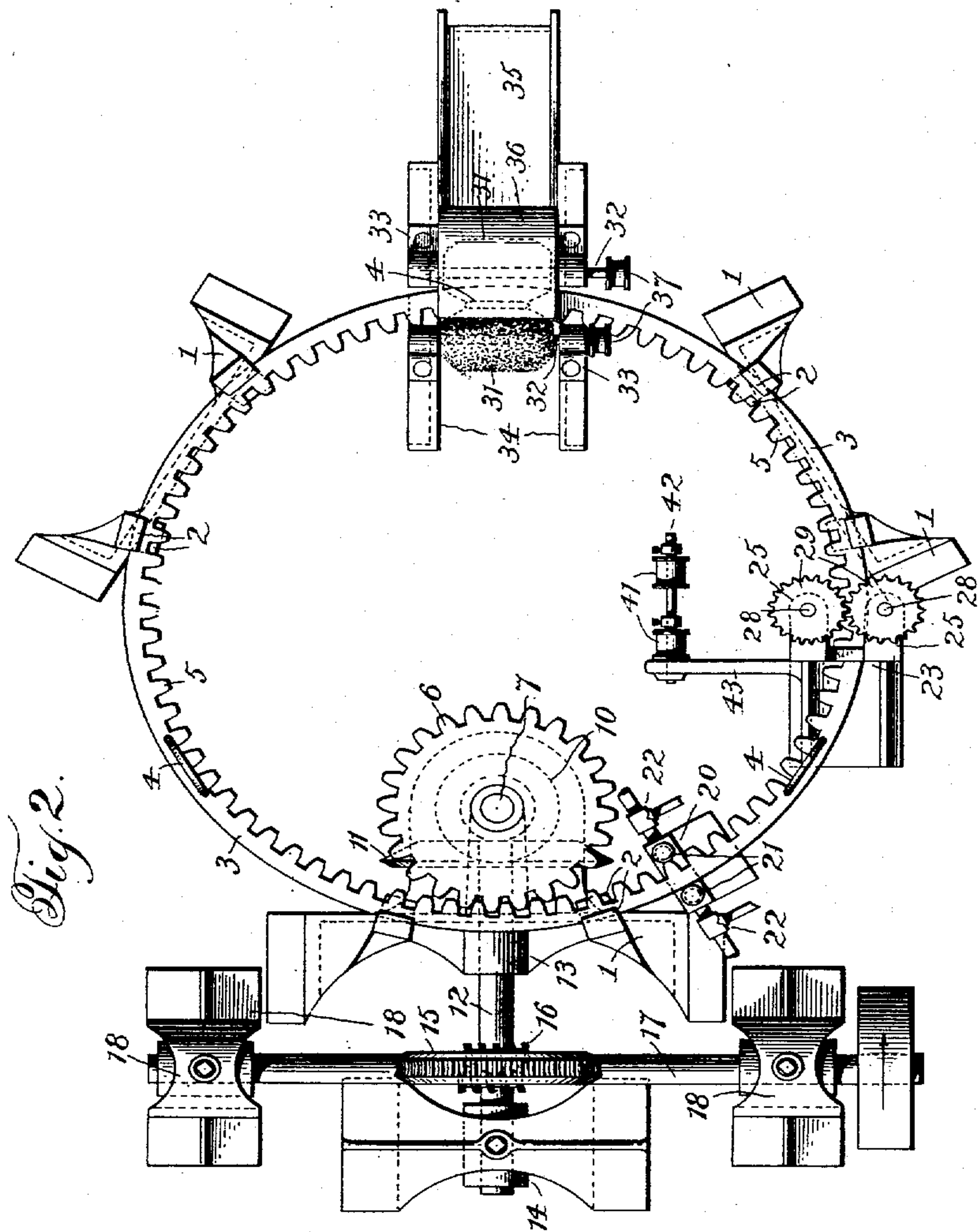
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919,999.

Patented Apr. 27, 1909.
4 SHEETS—SHEET 2.

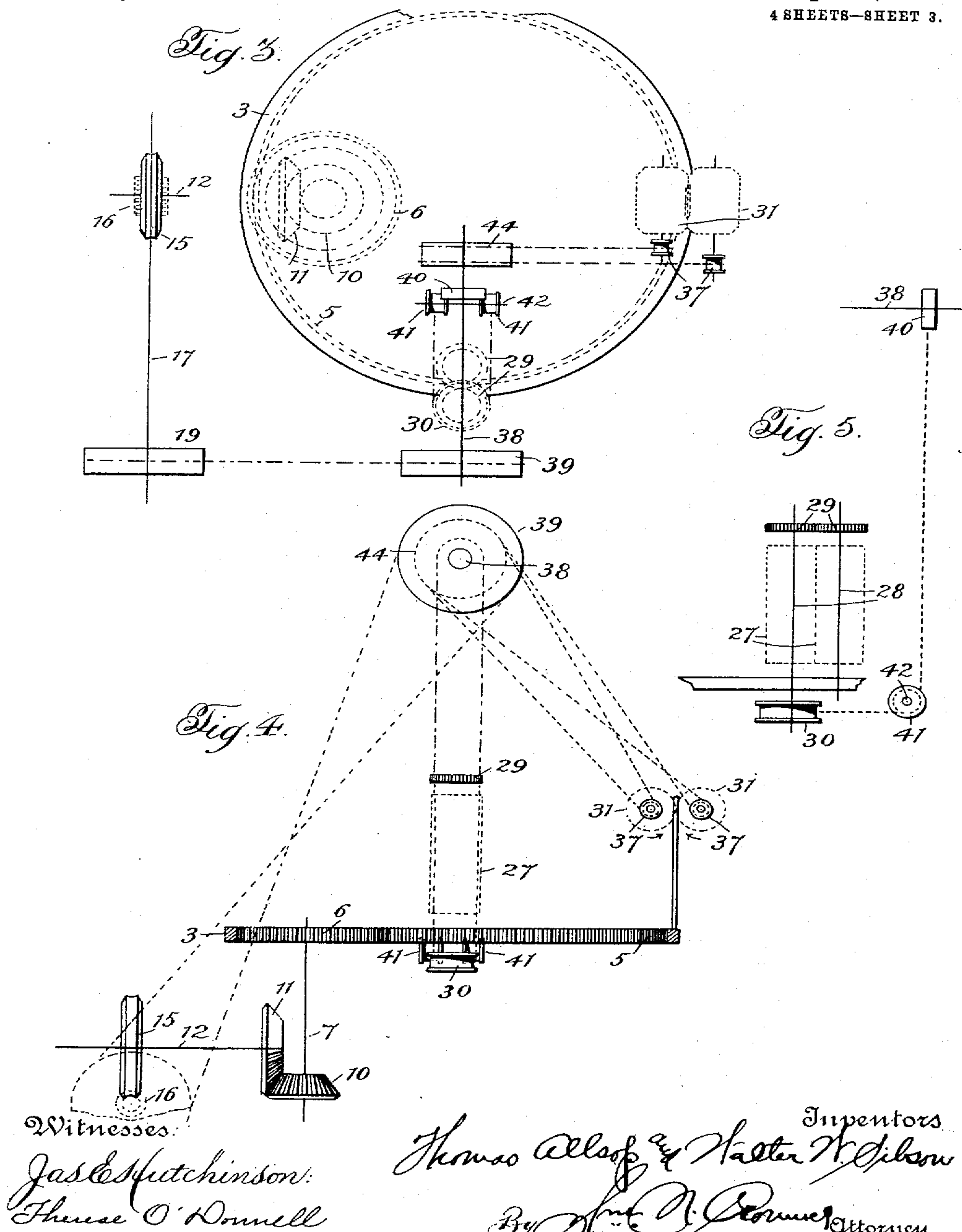


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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

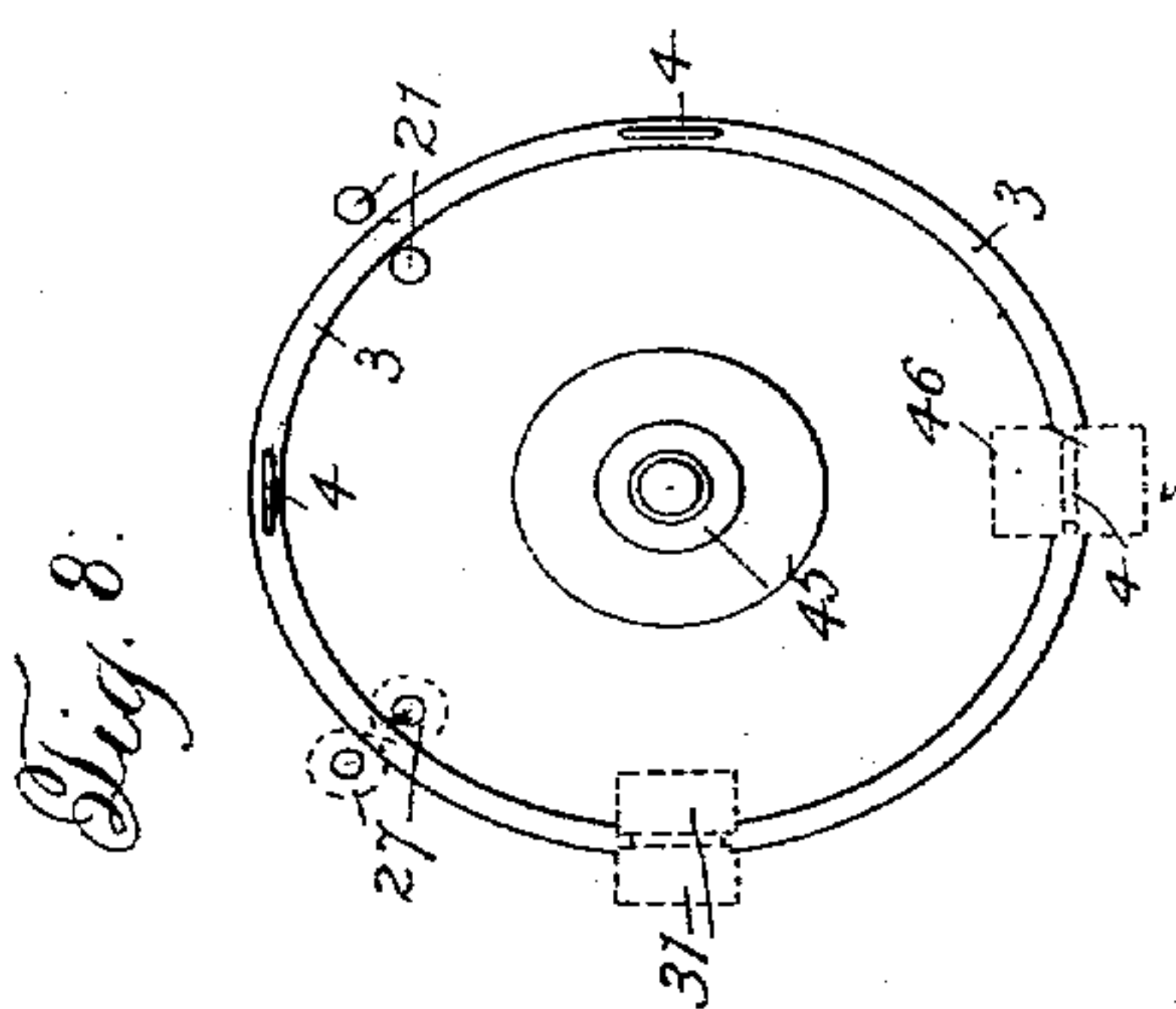


Fig. 8.

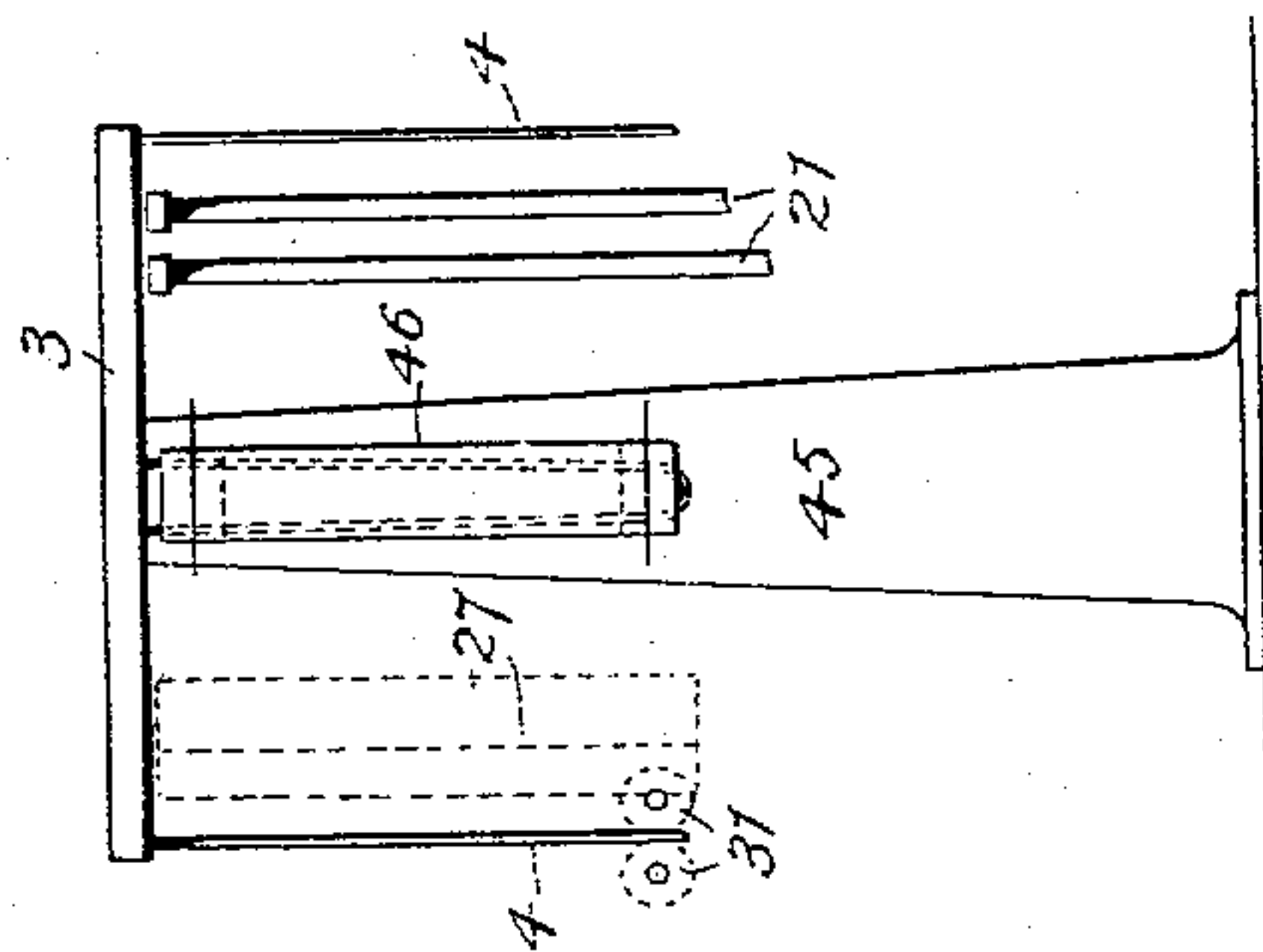


Fig. 9.

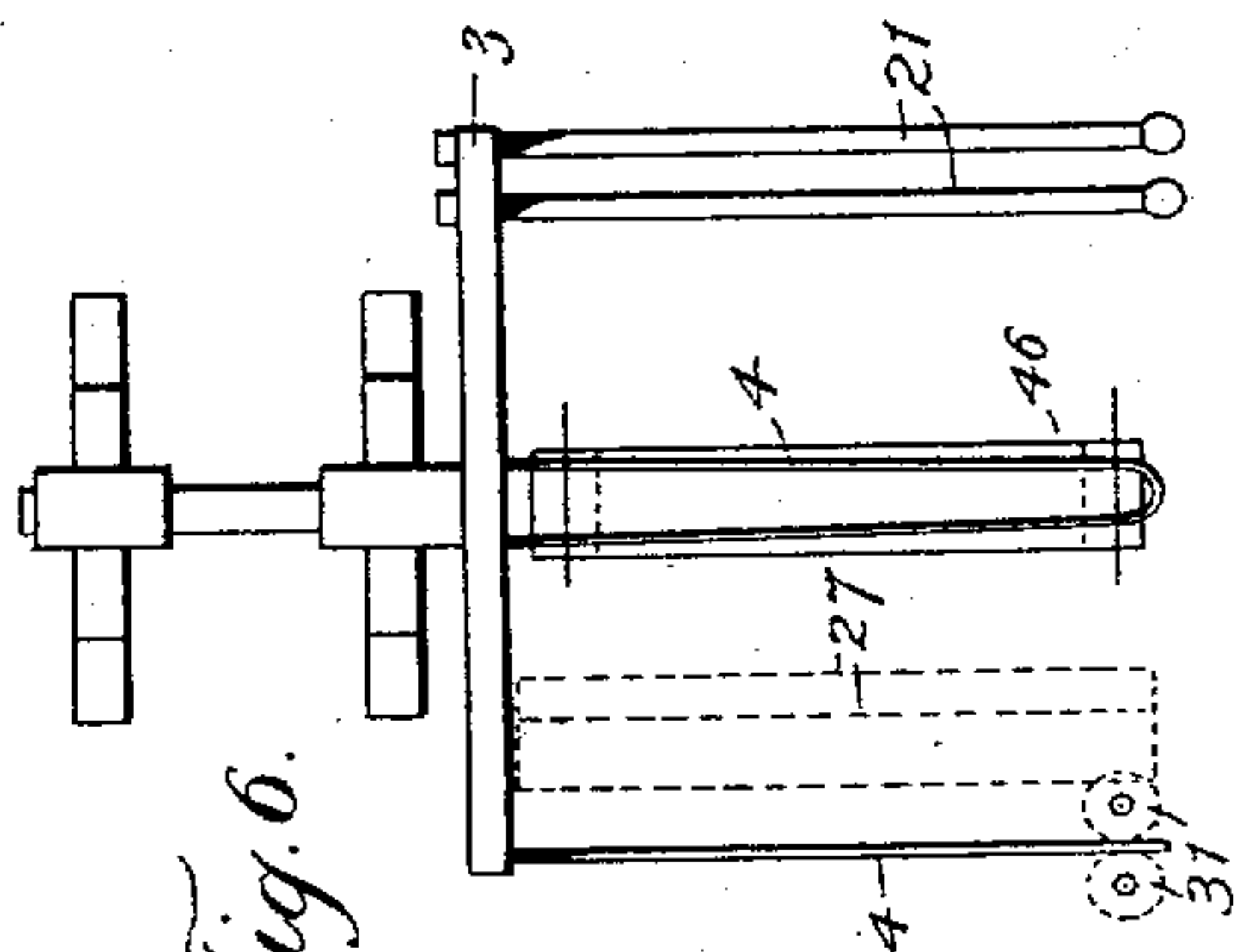


Fig. 6.

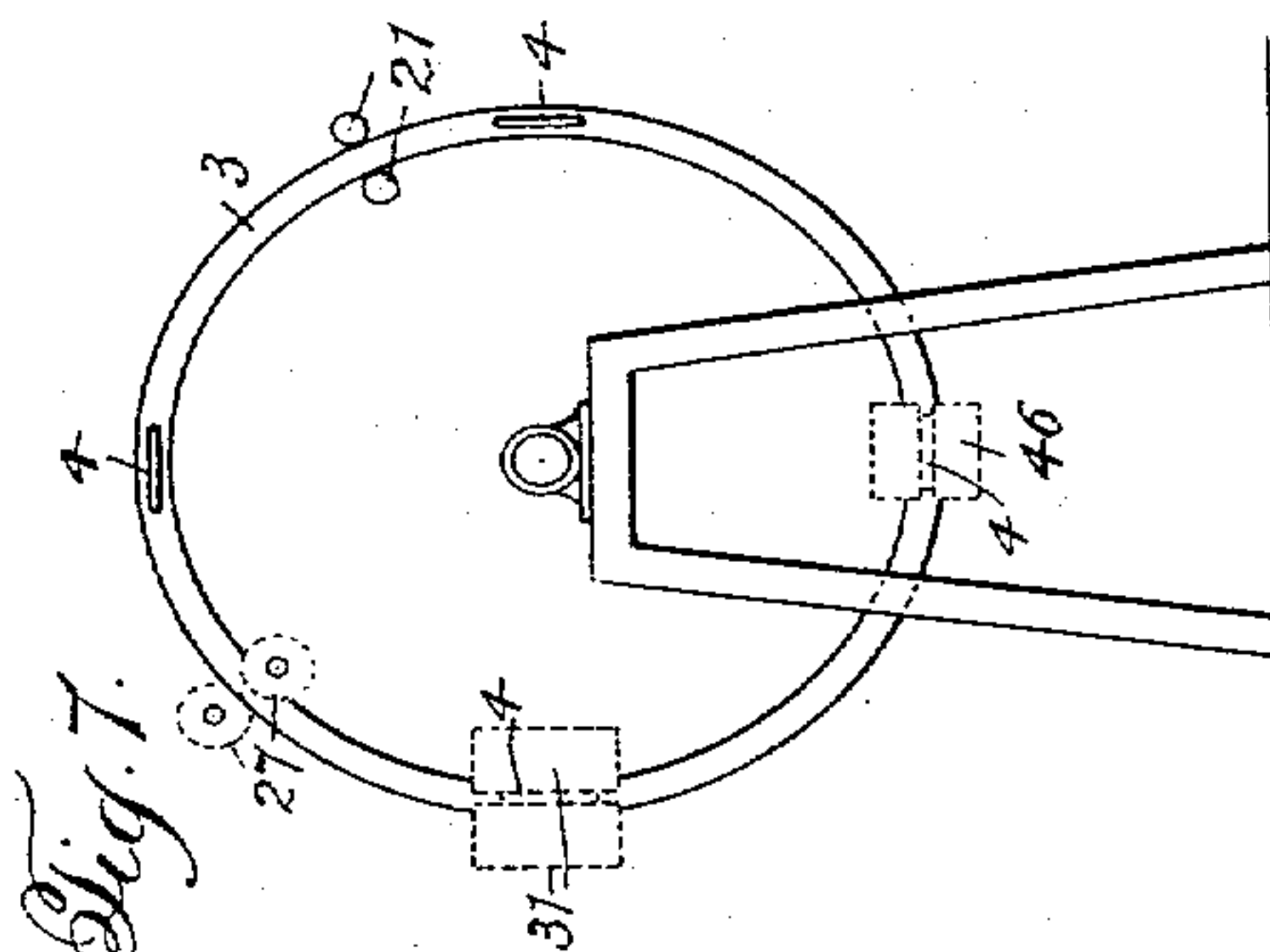


Fig. 7.

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UNITED STATES PATENT OFFICE.

THOMAS ALLSOP AND WALTER W. SIBSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS
TO THE PHILADELPHIA DRYING MACHINERY COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SINGEING-MACHINE.

No. 919,999.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed March 14, 1908. Serial No. 421,027.

To all whom it may concern:

Be it known that we, THOMAS ALLSOP and WALTER W. SIBSON, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Singeing-Machines; and we 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.

This invention relates to improvements in singeing machines, and more particularly to that class of such machines designed for use in finishing stockings.

In the art as heretofore practiced machines have been provided wherein the stockings are supported during the singeing operation through the medium of forms, these latter being generally boards upon which the stockings are stretched. These boards have had no fixed path of movement through the machines, neither has it been possible to pass the singeing flames through the interstices of the stockings, the boards forming solid barriers to the flames, so that by the use of the boards those machines depending thereon for the support of the stockings during the singeing operation are incapable of perfectly removing the loose fibers, or giving to the stockings the high grade of finish that is desirable. Moreover, in the machines of the prior art the forms bearing the stockings are fed lengthwise therethrough, that is, one end of the stocking, usually the toe portion, is first introduced to the action of the singeing flames, and the flames act upon the stockings while the latter are moving in the direction of their length. By reason of this the singeing of the stockings requires considerable time, comparatively speaking, it being obvious that the feeding of the stockings in the direction of their length will occupy a longer period than were the stockings fed in the direction of their width, or cross wise. It is also apparent that in the longitudinal feeding of the stockings considerable gas is consumed in effecting the singeing, by reason of the time necessary for the transit of the stockings through the singeing flames, so that a saving in the consumption of the gas is a material desideratum.

It is, therefore, the object of the present invention to provide a singeing machine of simple, compact and durable construction having its parts so arranged and related that the stockings will have a fixed path of movement through the machine, being subjected to the successive steps incident to their finishing in an expeditious and thorough manner, and enabling the singeing flames to properly attack the loose fibers from both sides of the stockings and within the interstices thereof to effectually carbonize and remove the same.

Furthermore, the present invention aims to provide a machine wherein the stockings are fed to the singeing flames while the stockings are moving in the direction of their width, or crosswise, thus permitting the stockings to be exposed to the flames for a brief period only, and effecting a material saving in the amount of gas that is necessary to carbonize the loose fibers.

Other objects and advantages will appear as the nature of the improvements is better understood, and to the accomplishment of the same, and the objects and advantages specifically enumerated, the invention consists substantially in the novel construction, combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of a singeing machine constructed in accordance with and embodying the principles of the present invention. Fig. 2 is a top plan view thereof. Figs. 3 and 4 are diagrammatic views, the former a plan and the latter a side elevation, illustrating the manner of driving the respective mechanisms of the machine. Fig. 5 is an elevation in detail of the driving means for the carbonized fiber-removing brushes. Fig. 6 is a plan view, and Fig. 7 is a side elevation, also diagrammatic, illustrating another form of the invention. Fig. 8 is an inverted plan view, and Fig. 9 is a side elevation, also diagrammatic, illustrating a further embodiment of the invention.

Referring in detail to the drawings, the numeral 1 designates a plurality of supporting standards, preferably three in number, said standards being arranged about a common center, and each of said standards

is provided at its upper end with a plurality of pairs of inwardly-extending lugs 2, the lugs of each pair being spaced apart to form guides that receive an annular carrier 3. It is to be noted that the lower lug of each pair projects inwardly to a point beyond the upper lug, and the lower lugs, therefore, form supports that effectually hold the carrier 3. It will also be observed, by reference to Fig. 2, that each pair of lugs 2 is slightly curved in order to conform to the curved outer edge of the carrier 3, and by reason of this it will be seen that the carrier 3 may readily travel between the pairs of lugs 2, and be held against both upward and downward displacement.

The carrier 3 has arranged upon its upper edge a plurality of upwardly-extending supporting forms 4. These forms are skeleton in outline, and may be made of stout wire, and the purpose thereof is to support the stockings in distended condition during their transit through the machine. By reason of such distention the interstices of the stockings are opened, and the singeing flames may readily enter therein from both sides of the stockings in order to carbonize the loose fibers, as will be presently described. It will be observed that the supporting forms 4 extend perpendicularly to the carrier 3. For driving the carrier 3 the latter is provided with internal gear teeth 5, and meshing with said teeth is a pinion 6 that is carried by a vertically-extending shaft 7, said shaft being journaled in suitable bearings 8 and 9 arranged, respectively, near the upper and lower ends of one of the standards 1. The lower bearing 9 is in the nature of a step bearing, and adjacent thereto is arranged a miter gear 10 that is fixedly connected to the shaft 7 for rotating the latter. Meshing with the gear 10 is a mutilated miter gear 11, said gear being carried by a horizontal shaft 12 that is journaled in suitable bearings 13 and 14, and said gear 11 is mutilated in such manner as to impart only an intermittent movement to the shaft 7, whereby the latter, in turn, causes the carrier 3 to rotate with an intermittent movement, thus imparting to the latter a series of periodical dwells as will hereinafter appear. The shaft 12 carries a worm-wheel 15, and said worm-wheel meshes with worm 16 that is mounted on a countershaft 17, the latter being journaled in suitable bearings 18 and carrying a driving pulley 19 through the medium of which motion is communicated to the countershaft 17 from a suitable source. It will therefore be seen that while the countershaft 17 and the shaft 12 continuously rotate, movement therefrom is imparted to the shaft 7 only intermittently, and this intermittent motion of the shaft 7 is utilized to cause the forms 4, bearing the stockings, to be successively advanced from

the point of application of the stockings to the forms.

A burner support 20 is positioned at a point adjacent to the shaft 7, and extending upwardly from said support is a pair of parallel burner tubes 21, said tubes being perforated at their opposing faces to emit the gas for the singeing flames, and said tubes are arranged at the sides of the carrier 3, and in parallel relation to the forms 4, so that the carrier passes between the tubes in the rotary motion that is imparted thereto. Each of the tubes 21 is provided with a suitable mixing device 22, whereby the gas and air may be properly mixed, and any approved construction of such device may be employed. A brush support 23 is also arranged in proximity to one of the supporting standards 1, said support 23 having a pair of upwardly-extending arms 24 provided with bearing heads 25 at their upper ends, the support 23 being also provided with a bearing bracket 26 that is arranged at a point below the plane of the lower edge of the carrier 3. The latter fits between the arms 24, and journaled in the heads 25 and the bracket 26 is a pair of vertically-arranged brushes 27 the shafts of which, 28, are provided at their upper edges with intermeshing gears 29. Through the medium of a pulley 30 that is carried by one of the shafts 28 at its lower end, simultaneous rotation is imparted to the brushes 27, and by this rotation these brushes are caused to remove the carbonized fiber from the singed stockings as the latter are carried by the forms 4 from the burner tubes 21. The brushes 27 have continuous rotation.

In order that the singed stockings may be automatically removed from the forms 4, after the stockings have been brushed to remove the carbonized fiber therefrom, a pair of stripping brushes 31 is employed. Each of these brushes is arranged upon a horizontal shaft 32 that is journaled in suitable bearings carried by parallel arms 33 of a supporting frame 34, the arms 33 being slightly spaced from each other to permit the carrier 3 passing therebetween, and in the movement of the carrier it will be observed that each of the forms 4 is successively introduced to the bight of the brushes 31, and the latter rotating in a direction corresponding to the length of the forms 4 the stockings are drawn upwardly from the forms. The outermost brush 31 has in proximity thereto a discharge chute 35, and extending upwardly from the upper end of said chute 35, and projecting over the space between the brushes 31, is a hood 36 by which the stockings, as the same are removed from the forms 4, are guided over the outermost brush 31 and deposited upon the chute 35. This chute discharges the stockings into a suitable receptacle, or if

desired a conveyer may be employed to remove the stockings to a suitable point or points after the same leave the chute 35. The shaft 32 of each of the brushes 31 is provided with a driving pulley 37, and through the medium of these pulleys proper rotation is imparted to said brushes 31 at the required speed.

By referring to Figs. 3 and 4 the exact manner of driving the respective mechanisms of the herein-described machine will be seen. A line shaft 38 has mounted thereon a pulley 39, which pulley is belted to the pulley 19; a second pulley 40 is carried by said shaft 38, which pulley is belted to the pulley 30 of one of the brushes 27, the belt from the pulley 40 to the pulley 30 traversing idler pulleys 41 mounted upon a supporting rod 42 that is fixedly connected to a bracket 43 carried by the brush support 23, and for driving the brushes 31 a third pulley 44 is carried by the line shaft 38 from which pulley two belts, one a straight belt, and one a cross belt, are carried to the pulleys 37.

By referring to Fig. 2, and also to Fig. 3, it will be noted that the pulleys 37 are not in alinement, and thus the two belts referred to may be readily connected to said pulleys in order that the brushes 31 may be driven in reverse directions.

Figs. 6 and 7 illustrate another form of the invention. This form contemplates positioning the carrier 3 to rotate in a vertical plane, in contradistinction to the horizontal plane of rotation characteristic of the form of the machine illustrated in Figs. 1 to 5. By referring to Figs. 6 and 7 it will be observed that the relative position of the carrier 3 and the forms 4 supported thereby, and the burner tubes 21; the fiber-removing brushes 27, and the stripping-brushes 31, is substantially the same as in Figs. 1 to 5.

In Figs. 8 and 9 is illustrated a further adaptation of the invention. This form, however, is an embodiment almost identical with the embodiment disclosed by Figs. 1 to 5, the difference residing in the fact that in lieu of the forms 4 projecting upwardly from the carrier 3, as in Figs. 1 to 5, these forms depend from the carrier, a single supporting standard 45 being sufficient to sustain the carrier 3 in its proper working position.

In the forms disclosed in Figs. 6 to 9 is shown a feed conveyer 46 for automatically positioning the stockings upon the forms 4. This automatic feeder may be employed also in connection with the form illustrated in Figs. 1 to 5, and as the construction of this feeder is fully set forth and described in our companion application filed Feb. 13, 1908, Ser. No. 415,689, it is not deemed necessary that the same should be described herein.

With the parts assembled as illustrated in Figs. 1 to 5, the operation of the machine is as follows: The unsinged stockings are applied to each of the forms 4 prior to the entrance thereof between the burner tubes 21. The carrier 3 is at rest at such time, this dwell of the carrier being due to the fact that the teeth of the mutilated gear 11 are not in engagement with the teeth of the gear 10. When, however, such engagement takes place the shaft 7 is caused to rotate a sufficient extent to pass the unsinged stocking between the burner tubes 21 and to bring the same to rest at a point between the burner tubes and the brushes 27. On the next movement of the carrier 3 the singed stocking is passed between the brushes 27, and by the action of the latter the carbonized fibers are removed from the stocking, and when the carrier 3 again comes to rest the form carrying the stocking lies between the stripping brushes 31. By the action of the latter the singed and brushed stocking is drawn upwardly from the form, and deflected by the hood 36 into the chute 35, from which the stocking is discharged either into a receptacle or upon a conveyer, as previously stated. The next movement of the carrier 3 brings the form from which the stocking has been removed to the point of application of the unsinged stockings, at which point another stocking is positioned thereon, and the cycle of operations described repeated. In passing through the burner tubes, the flames readily attack the loose fibers, by reason of the distended condition of the stocking and, moreover, the stocking passes through the singeing flames in the direction of its width and not of its length, so that only a very brief period of time is required for the passage of the stocking through the flames. This permits the stocking to be quickly singed, and in the transit of the stocking through the machine the same has a fixed path of movement from which the forms 4 do not deviate, and accurate work is thus assured.

A feature of decided advantage in connection with the present invention is the fact that as the stockings are fed to the burner tubes the edge of the stocking nearest thereto is introduced throughout its entire length to the action of the singeing flames, and this enables the toe portion of the stocking, as well as the mouth thereof, to enter the singeing flames simultaneously. In this respect the stocking is introduced to the singeing flames in a direct line.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. In a machine of the class described, a carrier, article supports arranged upon said carrier and extending perpendicularly thereto, singeing means arranged in juxtaposi-

tion to said carrier, and means for causing relative movement between said carrier and said singeing means to subject the articles to the action of the singeing means.

2. In a machine of the class described, a rotatable carrier, article supports arranged upon said carrier and extending perpendicularly thereto, singeing means arranged in juxtaposition to said carrier, and means for operating said carrier.

3. In a machine of the class described, a rotatable carrier, article supports arranged upon said carrier and extending perpendicularly thereto, singeing means arranged in parallel relation to said article supports, and means for operating said carrier.

4. In a machine of the class described, means for supporting the articles to be singed, means for singeing said articles, means for causing a relative movement between said supporting means and the singeing means, whereby the singeing means are caused to act upon the articles in the direction of their width, means for removing the carbonized fiber from the singed articles, and means for removing the articles from said supporting means.

5. In a machine of the class described, means for singeing, a support for the articles to be singed having movement relatively to said singeing means, whereby the articles to be singed are presented to the singeing means in the direction of the width of said articles, means for removing the carbonized fiber from the singed articles, and means for removing the articles from said support.

6. In a machine of the class described, means for singeing, a support for the articles to be singed having movement relatively to said singeing means, whereby the articles to be singed are presented to the singeing means in the direction of the width of said articles, means for imparting intermittent movement to said support, means for removing the carbonized fiber from the singed articles, and means for removing the articles from said support.

7. In a machine of the class described, a rotating carrier, means for supporting thereon the articles to be singed, means for singeing said articles, means for actuating said carrier whereby the latter is caused to present the articles in the direction of their width to the action of the singeing means, means for removing the carbonized fiber from the singed articles, and means for removing the articles from the supporting means.

8. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, means for singeing said articles, and means for actuating said carrier whereby the latter is caused to present the articles in the direction of their width to the action of the singeing means.

9. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, means for singeing said articles, means for actuating said carrier whereby the latter is caused to present the articles in the direction of their width to the action of the singeing means, and means for removing the carbonized fiber from the singed articles.

10. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, means for singeing said articles, means for actuating said carrier whereby the latter is caused to present the articles in the direction of their width to the action of the singeing means, means for removing the carbonized fiber from the singed articles, and means for removing the articles from the supporting means.

11. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, means for singeing said articles, and means for intermittently actuating said carrier to cause the latter to present the articles in the direction of their width to the action of the singeing means.

12. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, means for singeing said articles, means for intermittently actuating said carrier to cause the latter to present the articles in the direction of their width to the action of the singeing means, and means for removing the carbonized fiber from the singed articles.

13. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, means for singeing said articles, means for intermittently actuating said carrier to cause the latter to present the articles in the direction of their width to the action of the singeing means, means for removing the carbonized fiber from the singed articles, and means for removing the articles from the supporting means.

14. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, a pair of burner tubes for singeing said articles, and means for actuating said carrier whereby the articles thereon are caused to pass in the direction of their width between said burner tubes.

15. In a machine of the class described, an annular carrier, means for supporting thereon articles to be singed, a pair of burner tubes for singeing said articles, means for actuating said carrier whereby the articles thereon are caused to pass in the direction of their width between said burner tubes, and means for removing the carbonized fiber from the singed articles.

16. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, a pair of burner tubes for singeing said articles, means for actuating said carrier whereby the articles thereon are caused to pass in the direction of their width between said burner tubes, means for removing the carbonized fiber from the singed articles, and means for removing the articles from the supporting means.

17. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, a pair of burner tubes for singeing said articles, means for actuating said carrier whereby the articles thereon are caused to pass in the direction of their width between said burner tubes, a pair of brushes between which said articles are passed for removing the carbonized fiber from the singed articles, and means for

removing the articles from the supporting means.

18. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, a pair of burner tubes for singeing said articles, means for actuating said carrier whereby the articles thereon are caused to pass in the direction of their width between said burner tubes, a pair of brushes between which said articles are passed for removing the carbonized fiber from the singed articles, and a pair of stripping brushes for removing the articles from the supporting means.

In testimony whereof we affix our signatures, in the presence of two witnesses.

THOMAS ALLSOP.

WALTER W. SIBSON.

Witnesses:

RALPH M. ERWIN,

ELERY L. SMITH.

DISCLAIMER.

919,999.—*Thomas Allsop and Walter W. Sibson, Philadelphia, Pa. SINGEING-MACHINE. Patent dated April 27, 1909. Disclaimer filed June 10, 1910, by the assignee, The Philadelphia Drying Machinery Company.*

Enters this disclaimer—

“To that part of the claim of said specification which is included in the numbered claims 1 to 7, inclusive, and in the following words, to wit:

“1. In a machine of the class described, a carrier, article supports arranged upon said carrier and extending perpendicularly thereto, singeing means arranged in juxtaposition to said carrier, and means for causing relative movement between said carrier and said singeing means to subject the articles to the action of the singeing means.

“2. In a machine of the class described, a rotatable carrier, article supports arranged upon said carrier and extending perpendicularly thereto, singeing means arranged in juxtaposition to said carrier, and means for operating said carrier.

“3. In a machine of the class described, a rotatable carrier, article supports arranged upon said carrier and extending perpendicularly thereto, singeing means arranged in parallel relation to said article supports, and means for operating said carrier.

“4. In a machine of the class described, means for supporting the articles to be singed, means for singeing said articles, means for causing a relative movement between said supporting means and the singeing means, whereby the singeing means are caused to act upon the articles in the direction of their width, means for removing the carbonized fiber from the singed articles, and means for removing the articles from said supporting means.

“5. In a machine of the class described, means for singeing, a support for the articles to be singed having movement relatively to said singeing means, whereby the articles to be singed are presented to the singeing means in the direction of the width of said articles, means for removing the carbonized fiber from the singed articles, and means for removing the articles from said support.

“6. In a machine of the class described, means for singeing, a support for the articles to be singed having movement relatively to said singeing means, whereby the articles to be singed are presented to the singeing means in the direction of the width of said articles, means for imparting intermittent movement to said support, means for removing the carbonized fiber from the singed articles, and means for removing the articles from said support.

“7. In a machine of the class described, a rotating carrier, means for supporting thereon the articles to be singed, means for singeing said articles, means for actuating said carrier whereby the latter is caused to present the articles in the direction of their width to the action of the singeing means, means for removing the carbonized fiber from the singed articles, and means for removing the articles from the supporting means.”—[*Official Gazette, June 21, 1910.*]

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16. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, a pair of burner tubes for singeing said articles, means for actuating said carrier whereby the articles thereon are caused to pass in the direction of their width between said burner tubes, means for removing the carbonized fiber from the singed articles, and means for removing the articles from the supporting means.

17. In a machine of the class described, an annular carrier, means for supporting thereon the articles to be singed, a pair of burner tubes for singeing said articles, means for actuating said carrier whereby the articles thereon are caused to pass in the direction of their width between said burner tubes, a pair of brushes between which said articles are passed for removing the carbonized fiber from the singed articles, and means for

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“7. In a machine of the class described, a rotating carrier, means for supporting thereon the articles to be singed, means for singeing said articles, means for actuating said carrier whereby the latter is caused to present the articles in the direction of their width to the action of the singeing means, means for removing the carbonized fiber from the singed articles, and means for removing the articles from the supporting means.”—[*Official Gazette, June 21, 1910.*]

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“7. In a machine of the class described, a rotating carrier, means for supporting thereon the articles to be singed, means for singeing said articles, means for actuating said carrier whereby the latter is caused to present the articles in the direction of their width to the action of the singeing means, means for removing the carbonized fiber from the singed articles, and means for removing the articles from the supporting means.”—[*Official Gazette, June 21, 1910.*]

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