

F. G. SARGENT.
WOOL CLEANING MACHINE.

(Application filed Dec. 10, 1900.)

(No Model.)

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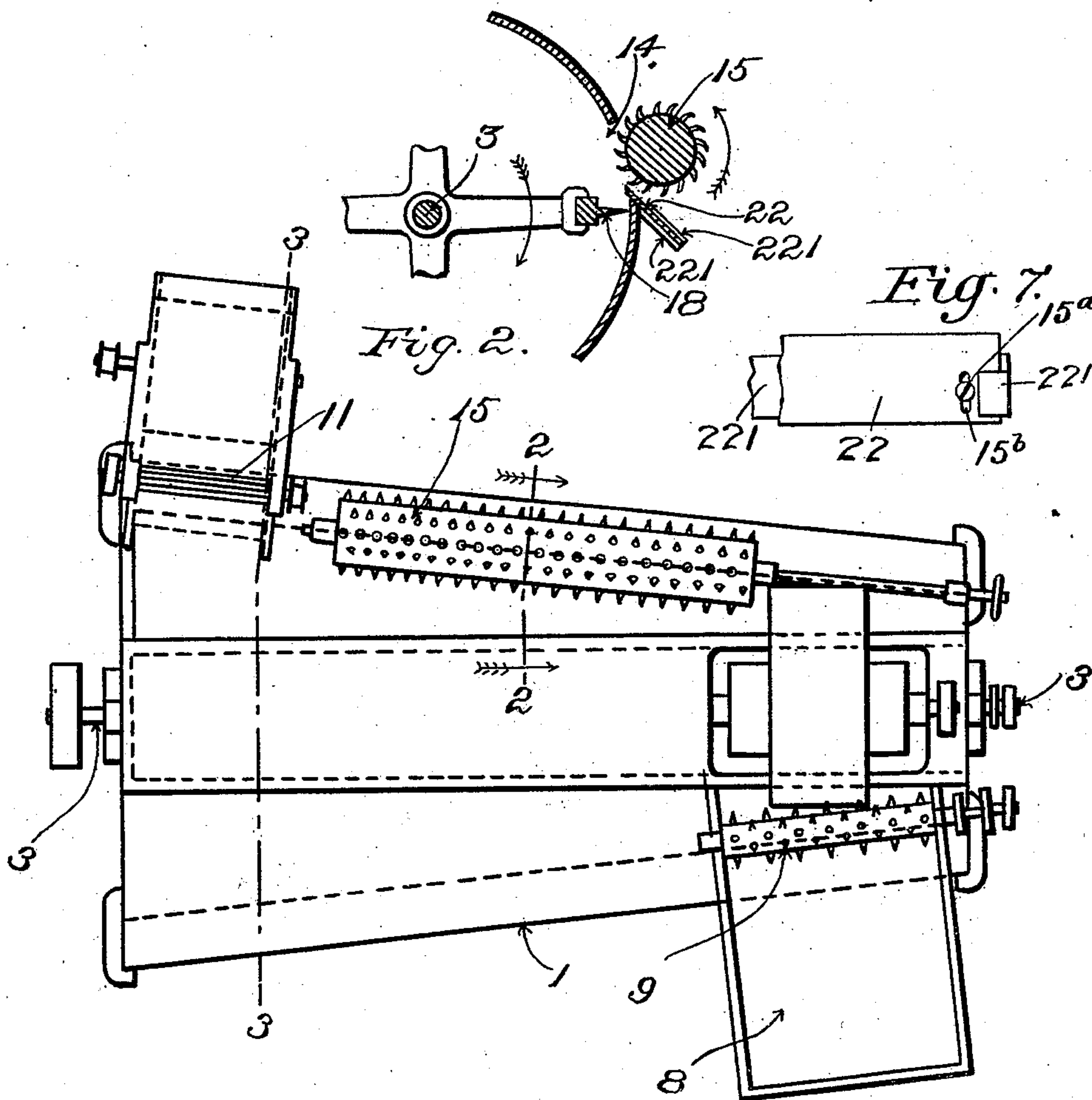


Fig. 2.

Fig. 7.

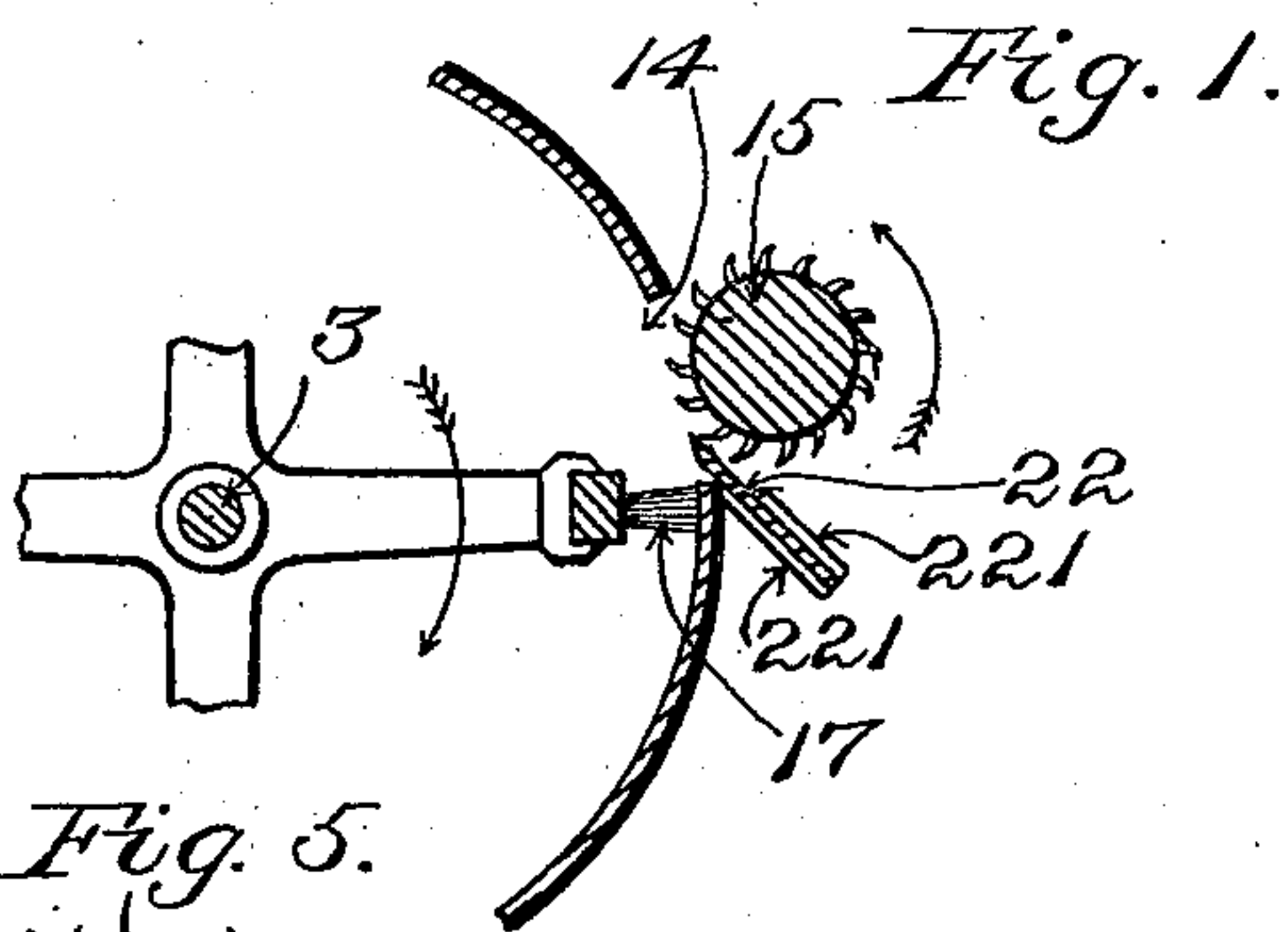
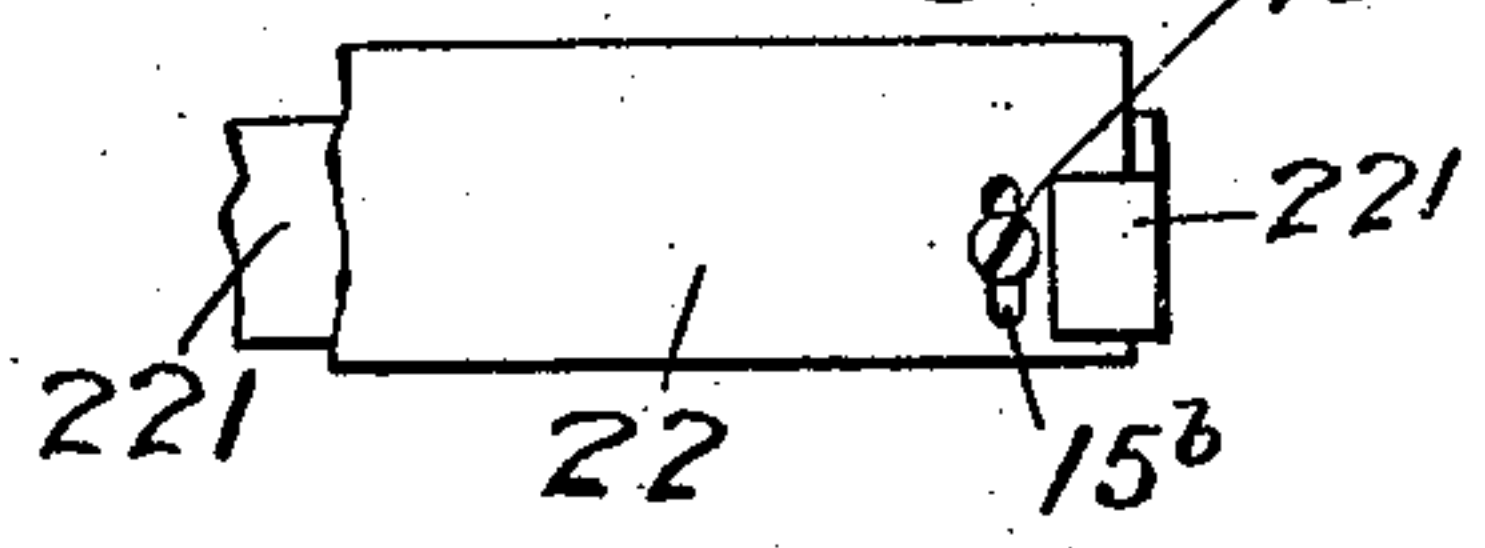


Fig. 5.

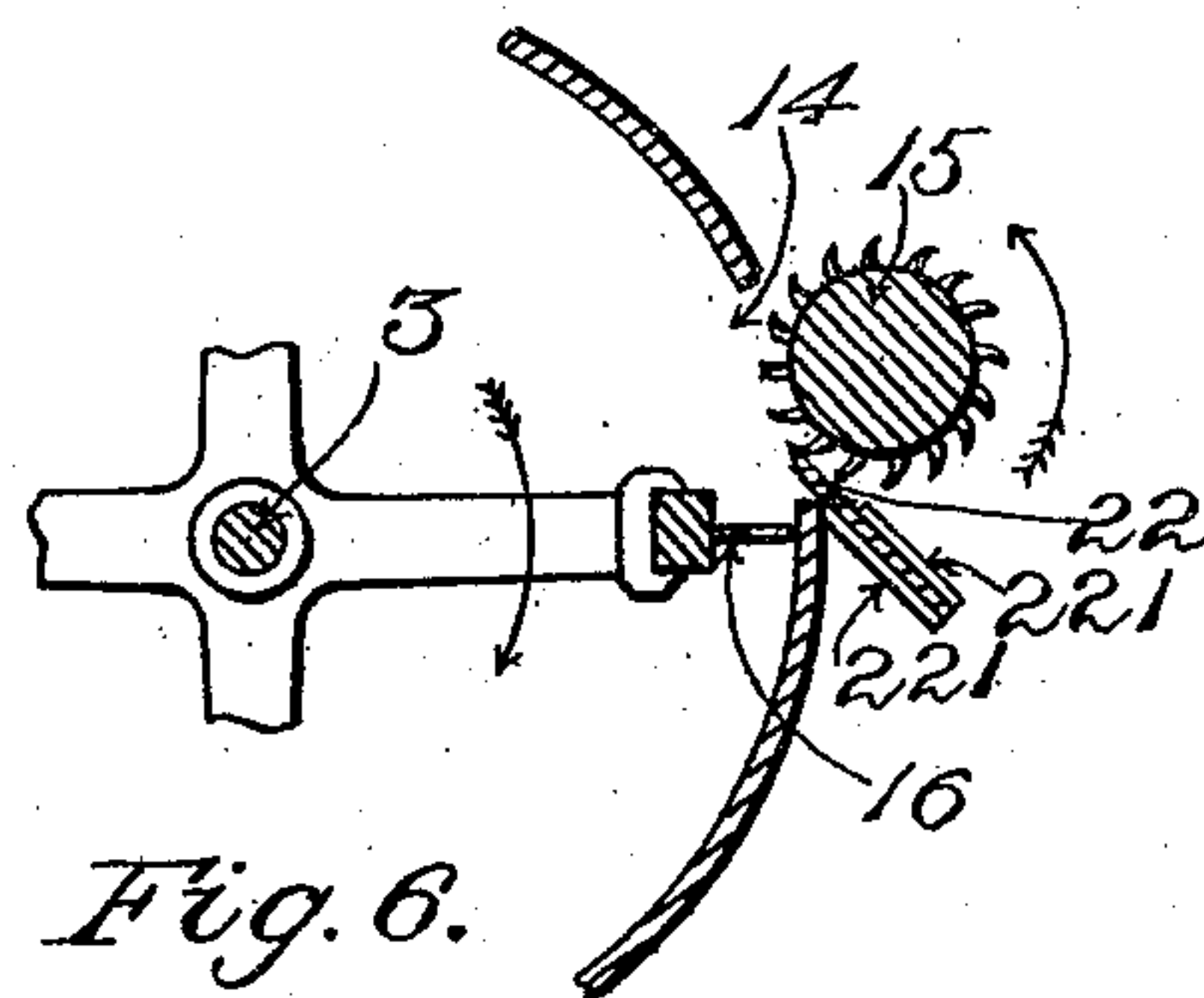


Fig. 6.

Witnesses:

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Inventor:

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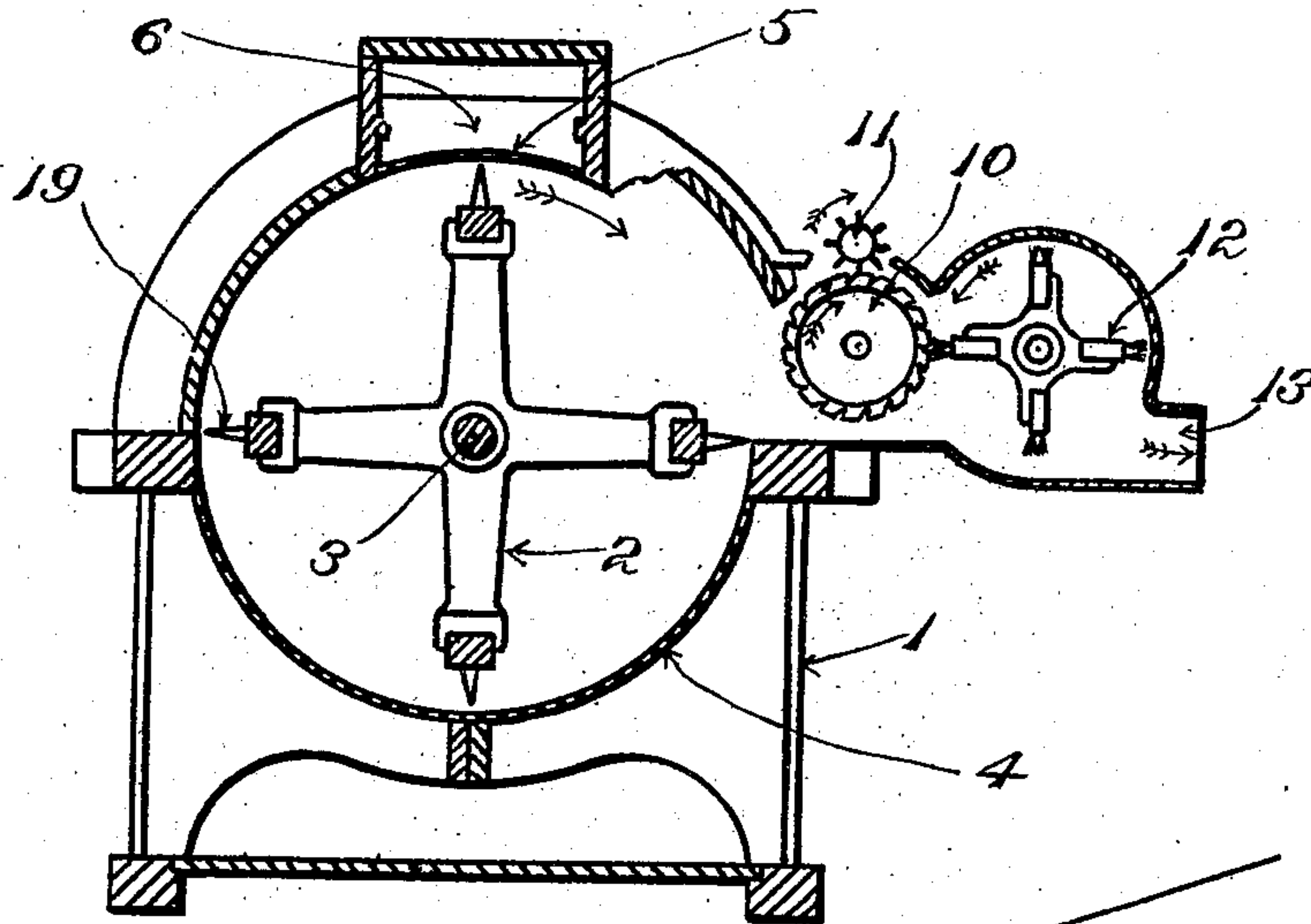


Fig. 3.

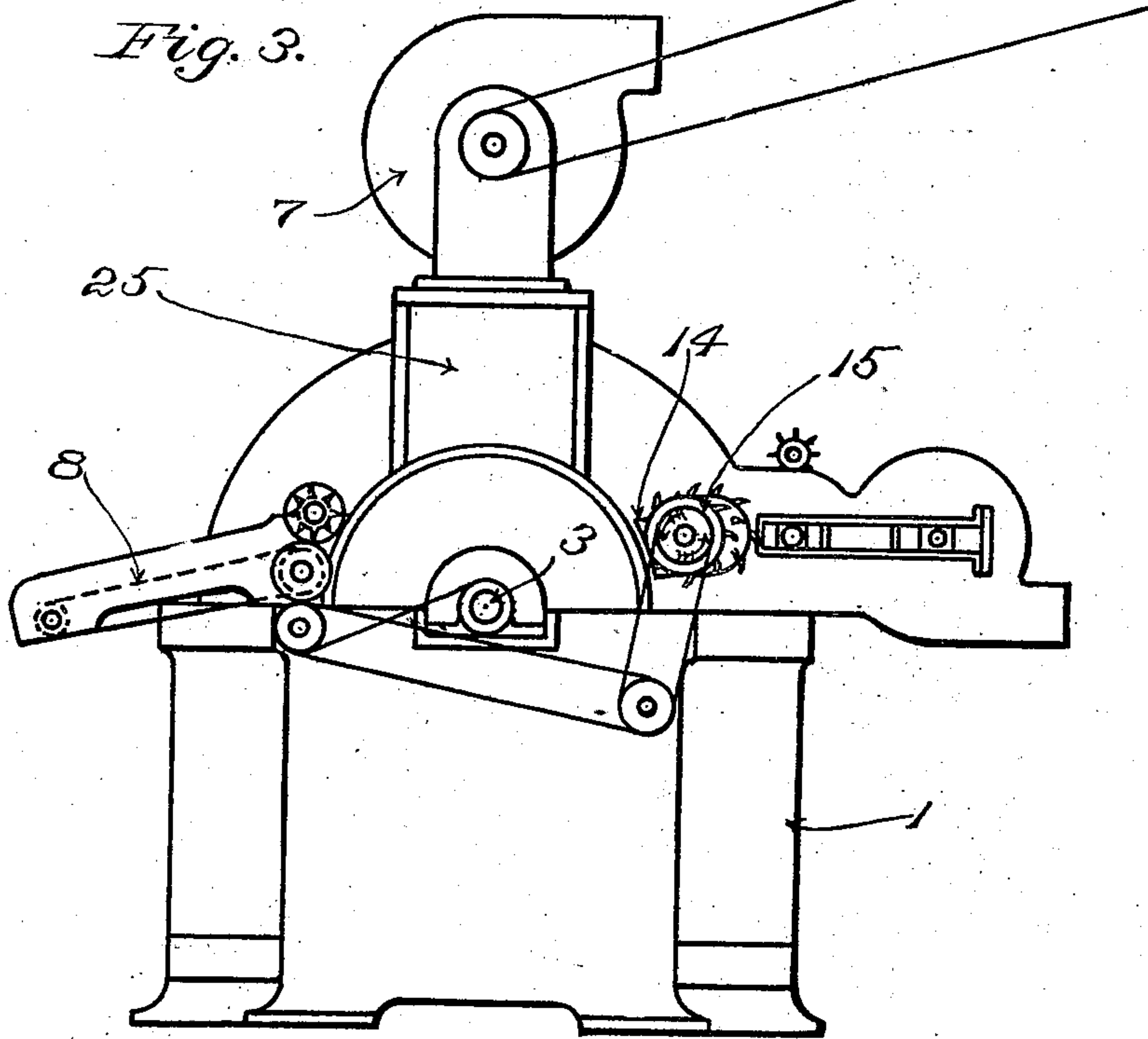


Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

FREDERICK G. SARGENT, OF GRANITEVILLE, MASSACHUSETTS.

WOOL-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 695,652, dated March 18, 1902.

Application filed December 10, 1900. Serial No. 39,365. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK G. SARGENT, a citizen of the United States, residing at Graniteville, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Wool-Cleaning Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention appertains to wool-cleaning machines of the general class which comprise within a main casing a rotating beater to open up the wool and free it from dirt and dust and certain auxiliary means to prepare the material under treatment for the succeeding operations through which it is to pass. To dispose of the dirt and heavier particles of foreign matter in such a machine, a grating or screen is provided beneath the beater, through which the wool cannot pass, but which allows the dirt, &c., to fall into a dead-air space beneath. To dispose of the dust and light particles of foreign matter, a second screen is provided above the beater, separating the compartment in which the latter works from an overhead passage or chamber, in which is located or with which is connected an exhaust-fan, whereby the dust, &c., is withdrawn through the said upper screen while the wool remains under the action of the heater. In order to submit the wool to a more thorough and prolonged treatment by the beater than would be had if the points of introduction and discharge thereof were in the same line at opposite sides of the periphery of the beater, a type of machine has been devised wherein the wool is caused to travel laterally on the beater while being rotated and agitated thereby, thus following a spiral course from its point of introduction to its point of discharge. I have heretofore in a machine of this last type arranged a burring-cylinder parallel to the beater in such manner that as the wool is carried around within the casing by the action of the beater a part thereof becomes caught by the said burring-cylinder on which it is exposed to the action of a guard, by means of which burs are removed therefrom, the fibers being returned to the action of the beater, the wool finally

being discharged from the machine through a spout at the end of the machine opposite to that at which it was introduced. With this combination and arrangement a considerable proportion of the burs which are contained originally in the wool are capable of being removed within the machine and the condition of the wool is improved; but many burs yet remain in the wool when discharged, and a large amount of dirt and dust is carried along with the stock by the current of air which issues at the said discharge-point.

My invention has for its chief aim to provide an improved machine in which the wool shall be effectually opened, dusted, burred, and discharged in a clean state and will now be described in detail in connection with the accompanying drawings.

In the drawings, Figure 1 is a plan view of a machine provided with my improvements. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 3 is a vertical section on the line 3 3 of Fig. 1. Fig. 4 is a view of the feed end of the machine. Figs. 5 and 6 are modifications similar to Fig. 2, as more particularly described hereinafter. Fig. 7 is a detail view showing chiefly the regulating-plate and its means of adjustment.

The numeral 1 designates the framing of the machine. 2 designates the beater, turning with the shaft 3.

4 is the screen that surrounds the lower part of the beater and allows of the escape of the heavier particles of foreign matter.

5 is the screen above the beater through which the particles of dust are drawn. The said screen 5 separates the beater-chamber from an overhead chamber or passage 6, with which connects the fan 7, whereby the dust is discharged from the machine. The feed-apron for the machine is shown at 8 and the toothed feed-roller at 9.

In order that the wool may be more effectually opened and cleaned, in consequence of being subjected to a thorough and prolonged treatment while under the control of the beater 2, the latter is of a construction to cause the wool after being fed into the machine at one end of the beater by the feed-apron 8 and feed-roll 9 to travel spirally

around within the machine and gradually pass laterally lengthwise of the beater, the discharge or delivery of the wool from the beater being arranged to take place at the opposite end of the beater. To this end I have shown in the present instance a cone-shaped beater revolving within a correspondingly-shaped chamber.

At the discharge end of the machine is located a burring-cylinder 10, a rotating guard 11, and a rotating brush 12. When the wool has been carried through the machine from the small end of the beater-chamber to the large end thereof, it is delivered to the burring-cylinder 10 and is carried around on the latter, the projecting burs, &c., being knocked off by the rotating guard 11, the fan drawing back under the guard into the machine any fiber knocked off. The fiber that has been cleared of burs and shives by being carried on the burring-cylinder past the guard is discharged directly from the machine by being doffed from the burring-cylinder by the rotating brush 12 and is discharged through the spout 13.

A longitudinal aperture 14 is made in the casing of the beater-chamber, and in the said opening is set an auxiliary toothed cylinder 15, whose periphery is immediately adjacent to that of the beater. The said auxiliary cylinder 15 receives the wool that is being carried around by the beater, but does not retain the said wool through a complete rotation on its own axis. The wool is only carried by the auxiliary cylinder on that portion of the latter which is within the beater-chamber. Through the slit between the edge of the aperture 14 and the surface of the auxiliary cylinder 15 a continuous draft of air into the chamber is set up by the action of the fan 7 and also in part by the action of the beater 2. This indraft of air through longitudinal opening or aperture 14 operates automatically to strip or doff the wool from the teeth of the auxiliary cylinder at the lower side of the opening or aperture 14 and to retain the said wool within the beater-chamber. Preferably the auxiliary cylinder and the beater are caused to rotate in opposite directions, so that the adjacent portions of their peripheries will move in the same direction, the peripheral speed of the auxiliary cylinder being in such case less than that of the beater. Preferably, also, as indicated by the arrows in the drawings, the beater is rotated in such a direction as to beat the fiber down upon the auxiliary cylinder rather than up against it, inasmuch as it has been found that substantially better results are secured by the former mode of operation than by the latter. Again, the teeth of the auxiliary cylinder are preferably inclined, as shown in the drawings, in the direction from which the fiber is received upon them, so that the latter will be readily caught and retained and so also that the action of the indraft of air in stripping the fiber off

the said teeth will be freely effected with the least amount of resistance operating to retain the fiber on the teeth.

For the purpose of enabling the force of the indraft through the opening 14 to be varied as required in practice in order to enable the desired results to be attained I provide means whereby the width of the said opening or aperture may be varied at will. To this end a regulating-plate 22 is employed in connection with the opening or aperture beneath the auxiliary cylinder 15. This regulating-plate is arranged to be adjusted transversely of the width thereof with the aid of any well-known means for the purpose—as, for instance, clamping-screws 15^a, working in slots 15^b in said regulating-plate, as indicated in Fig. 7. Through the adjustment of the regulating-plate the force of the draft may be so controlled as to cause fibers presenting themselves at the opening or aperture to be carried back into the sphere of action of the beater, while permitting heavy impurities which have become detached from the wool to pass out at the opening or aperture. The auxiliary cylinder acts so effectively to open up the stock that varieties of stock which ordinarily are not in condition to be treated by a burring-cylinder after being delivered from a beater may be, in the present machine, fully prepared for such treatment. In some cases in order to clean the wool of a portion of the burs which it contains I set or adjust the regulating-plate 22 so that the inner edge portion thereof projects sufficiently into the opening or aperture 14 to encounter the burs as the wool with which they are associated is swept past by the action of the beater. Preferably in these cases the beater is provided with flat plates 18, Fig. 2, in lieu of the usual separate teeth 19, Fig. 3, or with brushes 17, Fig. 5, or with combs 16, Fig. 6. A cooperating means of effecting this preliminary separation of burs from the stock and causing the former to be discharged from the machine while the fiber is returned again to the action of the heater is a sliding door 25, opening into the passage 6 above the heater-chamber. By properly adjusting the sliding door 25 the indraft of air through the opening 14 which operates to doff the fiber from the auxiliary cylinder can be increased or decreased, so as to permit the lightest burs to escape through the slit or opening between the edge of the regulating-plate 22 and the said auxiliary cylinder, while the fiber itself is drawn back off the teeth of the cylinder into the machine.

It will be observed that as the stock is carried spirally along within the casing of the machine from the feed end toward the other end it is fed first to one end of the burring-cylinder and is gradually worked toward the other end of the latter. Thereby the stock is more opened up as it passes the guard, which allows the guard to have better access

to any foreign matter that may be contained in the stock. Inasmuch as the stock is received upon the burring-cylinder instead of being blown out of a discharge-spout by the action of the heater as heretofore, the free escape of dirt and dust with the wool as in prior machines is prevented. In the present machine the action of the fan draws a current of air into the machine under the burring-cylinder, which further insures the escape of such matters. My improved machine delivers the wool in a clean condition, free from burs.

What I claim is—

1. A wool-cleaning machine comprising essentially, a rotating beater, a casing, a toothed opening-cylinder receiving the wool carried around by the said beater and cooperating with the latter intermediate the feed of the wool to the beater and its final delivery from the latter to open the wool and loosen burs and other impurities, and an air-inlet admitting an inwardly-flowing current of air which impinges upon the said periphery and strips the wool from the teeth of said cylinder, returning it to the action of the beater, substantially as described.

2. In a wool-cleaning machine, the combination of a rotating beater, a casing therefor, having an air-inlet therein, an auxiliary toothed cylinder occupying the said air-inlet and adapted to receive wool from the beater, and means to vary the opening between the edge of the said air-inlet and the said auxiliary cylinder, and thereby vary the indraft of air through the said air-inlet.

3. In a wool-cleaning machine, the combination of a rotating beater, a casing therefor having an air-inlet therein, an auxiliary toothed cylinder occupying the said air-inlet and adapted to receive wool from the beater, said toothed cylinder cooperating with the beater intermediate the feed of the wool to the latter and its final delivery from the latter to open up the wool and loosen burs and other impurities, and a plate adjacent the said auxiliary cylinder provided with means of adjustment whereby to vary the opening between the casing and the cylinder and thereby regulate the indraft of air through the said air-inlet.

4. In a wool-cleaning machine, the combination of a rotating beater, a casing therefor, having an air-inlet therein, an auxiliary toothed cylinder occupying the said air-inlet and adapted to receive wool from the beater, said toothed cylinder cooperating with the beater intermediate the feed of the wool to the beater and its final delivery from the latter to open up the wool and loosen burs and other impurities, a regulating-plate mounted in position to slide toward and from the point of approximate contact of the beater and auxiliary cylinder and thereby vary the indraft of air between the said regulating-plate and

the auxiliary cylinder whereby the fiber carried on the latter is stripped therefrom and returned to the action of the beater, while burs are discharged from the machine.

5. In a wool-cleaning machine, the combination of a rotating beater, a casing therefor, having an air-inlet therein, an auxiliary toothed cylinder occupying the said air-inlet and adapted to receive wool from the said beater, said toothed cylinder cooperating with the beater intermediate the feed of the wool to the beater and its final delivery from the latter to open up the wool and loosen burs and other impurities, a fan connected with the beater-chamber to produce an indraft of air through the said air-inlet, and thereby strip or doff the wool from said cylinder and return it to the action of the beater, and a regulating-door cooperating with the said fan and rendered adjustable to vary the strength of the said indraft.

6. In a wool-cleaning machine, the combination of a rotating beater, a casing therefor, having an air-inlet in that side thereof at which the teeth of the beater are descending, and an auxiliary toothed cylinder occupying the said aperture and receiving the wool from the beater, the indraft of air through the said air-inlet acting to strip the fiber from the teeth of the auxiliary cylinder and return it to the action of the beater, said toothed cylinder cooperating with the beater intermediate the feed of the wool to the beater and its final delivery from the latter to open up the wool and loosen burs and other impurities.

7. In a wool-cleaning machine, the combination of a rotating beater, a casing therefor, having an air-inlet therein, an auxiliary toothed cylinder occupying the said air-inlet, said toothed cylinder cooperating with the beater intermediate the feed of the wool to the beater and its final delivery from the latter to open up the wool and loosen burs and other impurities, and means to rotate the beater and auxiliary cylinder in opposite directions, the said air-inlet causing the indraft of air through the same acting to strip the fiber from the teeth of the auxiliary cylinder and return it to the action of the beater.

8. In a wool-cleaning machine, the combination of a rotating beater, a casing for the same, having an air-inlet therein, an auxiliary toothed cylinder occupying the said air-inlet and receiving wool from the beater, said toothed cylinder cooperating with the beater intermediate the feed of the wool to the beater and its final delivery from the latter to open up the wool and loosen burs and other impurities, and means for creating an indraft of air through the said air-inlet to strip or doff the wool from the auxiliary cylinder and return it to the action of the beater.

9. In a wool-cleaning machine, the combination of a rotating beater adapted to give the wool a progressive spiral motion in the

direction of the length of said beater, means
to feed wool to said beater at or adjacent one
end of the latter, a toothed burring-cylinder
lengthwise of which the wool is worked by
5 the action of the beater, and by which the
wool is taken away from the said beater, a
guard by which burs are removed from the
said burring-cylinder, and means to strip the

fiber from the latter, and discharge the same
from the machine, substantially as described. 10

In testimony whereof I affix my signature
in presence of two witnesses.

FREDERICK G. SARGENT.

Witnesses:

CHAS. G. SARGENT,
R. E. REDDING.