

No. 854,028.

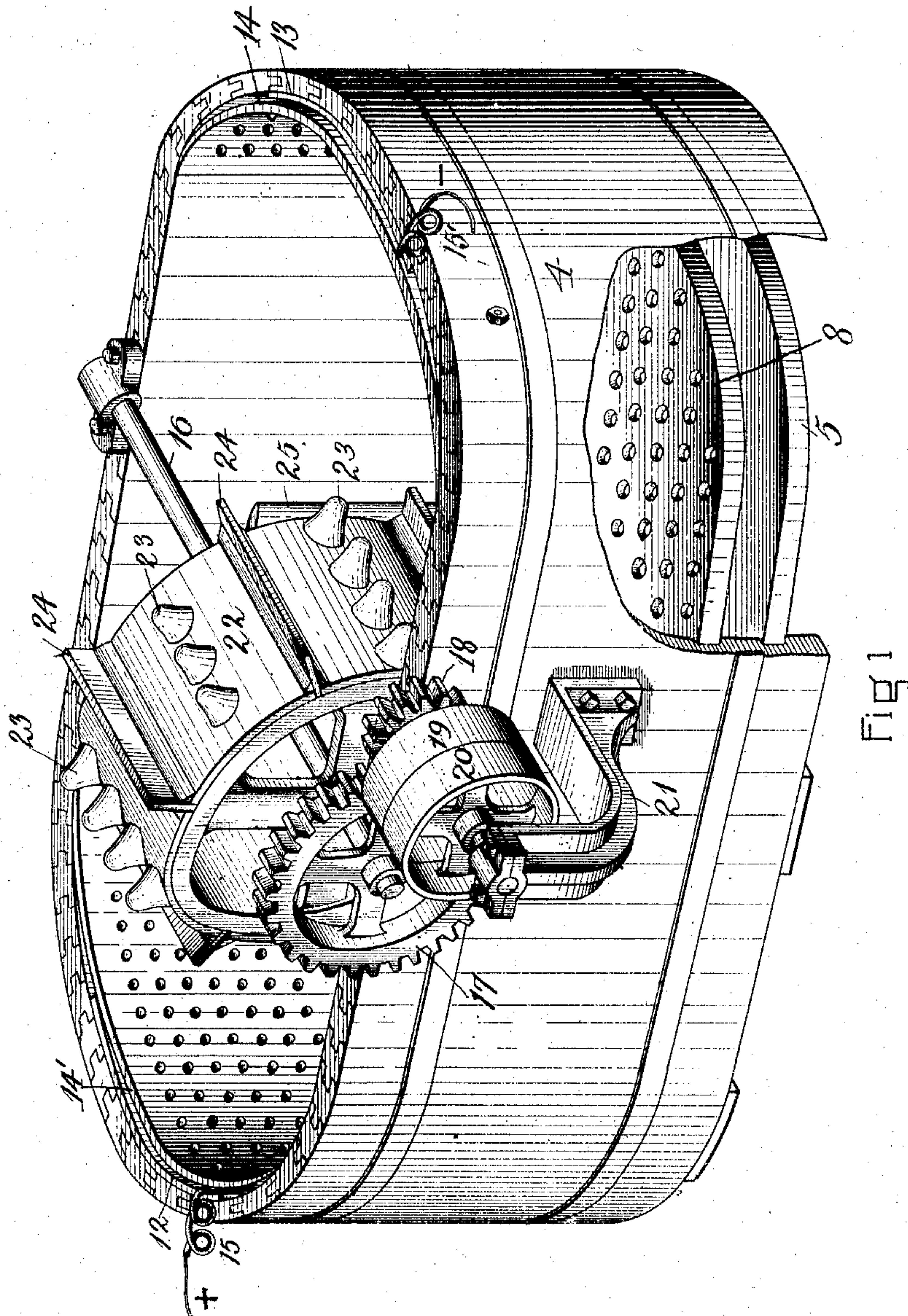
PATENTED MAY 21, 1907.

G. D. BURTON.

ELECTRIC WOOL WASHING AND CLEANSING APPARATUS.

APPLICATION FILED AUG. 11, 1905.

3 SHEETS—SHEET 1.



WITNESSES
E. J. Philipson.
Wm. Dadeh.

INVENTOR
G. D. Burton

No. 854,028.

PATENTED MAY 21, 1907.

G. D. BURTON.

ELECTRIC WOOL WASHING AND CLEANSING APPARATUS.

APPLICATION FILED AUG. 11, 1905.

3 SHEETS—SHEET 2.

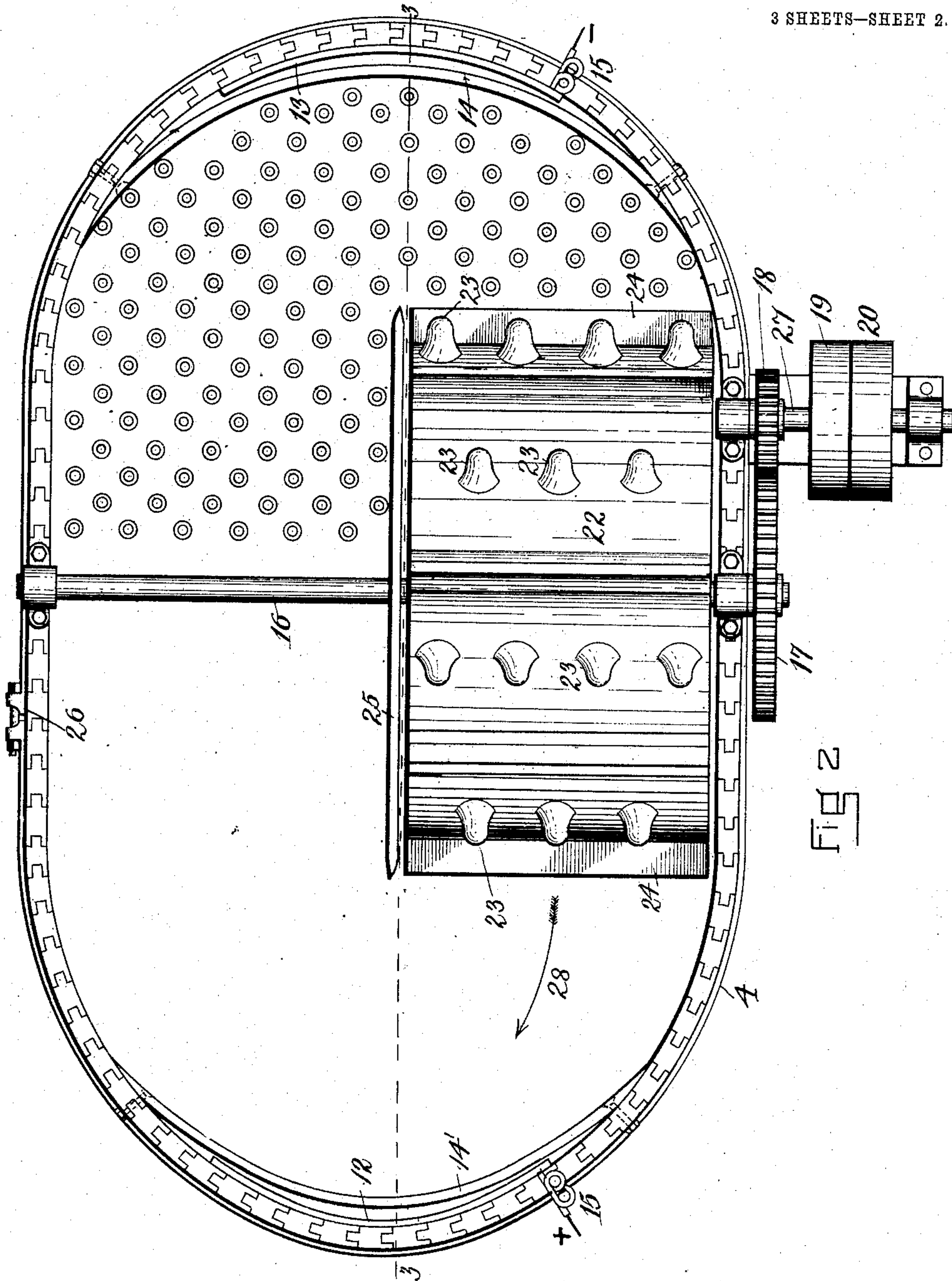


FIG 2

WITNESSES
C. A. Phillips on.
Wm. E. Dade Jr.

INVENTOR
G. D. Burton,

No. 854,028.

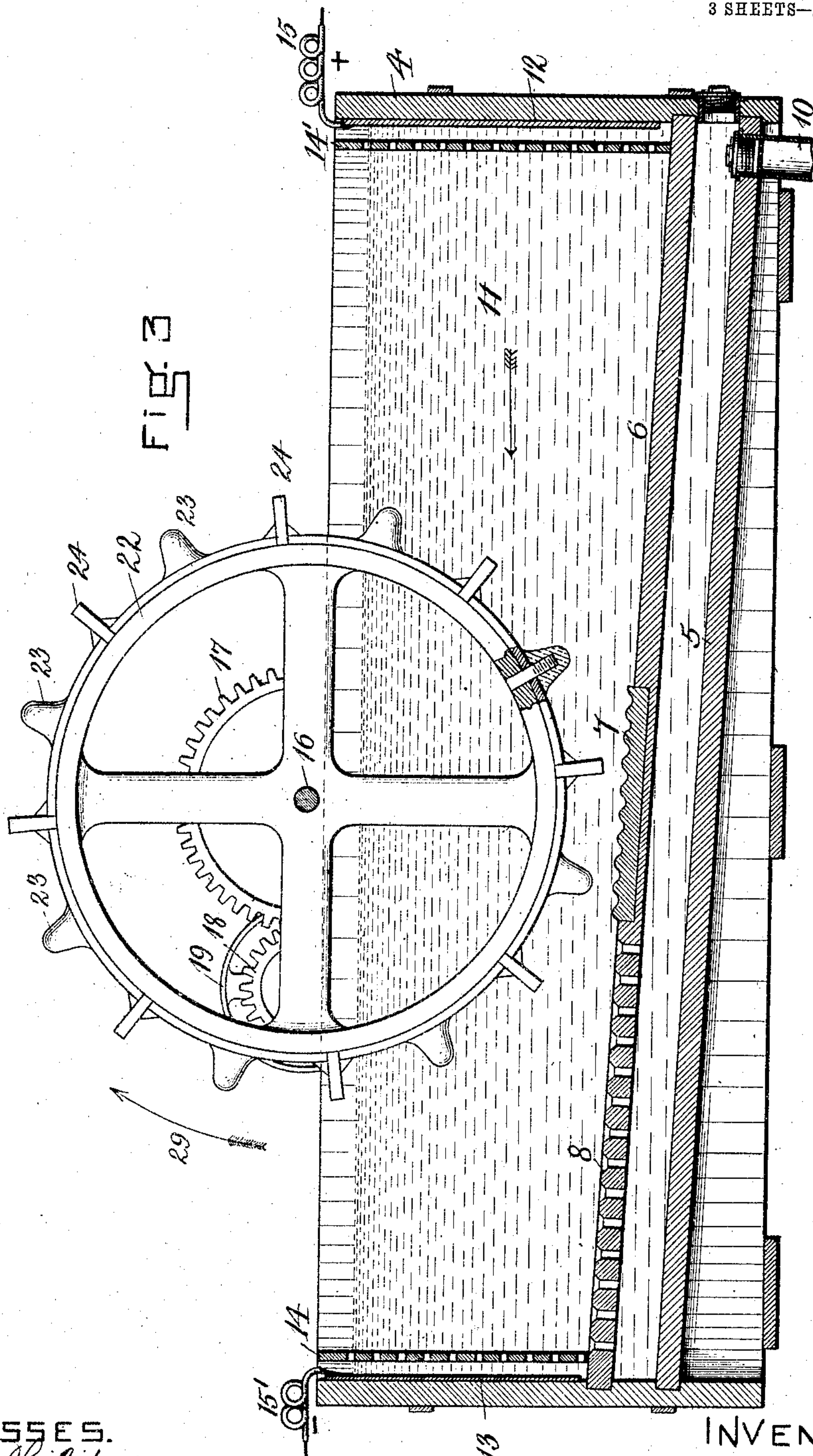
PATENTED MAY 21, 1907.

G. D. BURTON.

ELECTRIC WOOL WASHING AND CLEANSING APPARATUS.

APPLICATION FILED AUG. 11, 1905.

3 SHEETS—SHEET 3.



WITNESSES.

E. F. Phillips.

Wm. D. Burton.

INVENTOR

G. D. Burton

UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO AMERICAN ELECTRICAL PROCESS COMPANY, OF BOSTON, MASSACHUSETTS.

ELECTRIC WOOL WASHING AND CLEANSING APPARATUS.

No. 854,028.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed August 11, 1905. Serial No. 273,827.

To all whom it may concern:

Be it known that I, GEORGE D. BURTON, a citizen of the United States, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Electric Wool Washing and Cleansing Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention consists in an apparatus for washing and cleansing wool and other textile substances, such as cotton, hair, flax, etc., in an electrolytic treating solution, through which a current or currents of electricity of the desired voltage and amperage is passed, including means for mechanically agitating the liquid and the substances to be treated and for introducing the electric current.

The desired object is attained by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a perspective view, showing my apparatus. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal vertical section taken on line 3—3 of Fig. 2, looking from the rear side.

In the drawings, 4 represents an oval shaped tank having a firm, water-tight bottom, 5, and a vertical outlet, 10, see Fig. 3. A second bottom, like the first, is inclined, as shown, but differs from the first, inasmuch that it has three characteristics, namely—the part 6 is plain and tight, the part 7 is corrugated and the part 8 perforated. At one end of the tank a positive electrode, 12, is located, having an electrical connection, 15. At the other end an electrode, 13, is located and has an electrical connection, 15. These electrodes are shielded by perforated fenders, 14, 14', through which the treating fluid, 11, in the tank can freely circulate, but the substance being treated is fully protected from the direct action of the electrodes, 12 and 13. The oval tank is usually made of wood, or any suitable non-conducting material, and bound with metallic hoops. The ends of these hoops may be coupled together by an adjustable screw connection, one of which is shown at 26, Fig. 2.

The agitating machinery consists of a shaft, 16, which is driven by belt pulleys, 19 and 20, mounted upon a countershaft, 27, which carries a pinion, 18, which engages with the spur gear, 17, and thus transmits

motion to the shaft, 16, and agitating drum, 22. The countershaft, 27, is supported by the bracket, 21. The end of the drum, 22, located in the tank near the center, is protected by a fixed screen or partition, 25, which acts as a shield, to prevent any of the floating contents of the tank from becoming entangled with the inner parts of the agitating drum, 22. The screen, 25, also serves as a partition, to assist in directing the flow of the contents of the tank, which is caused by the rotation of the agitating drum, 22. The flow of current is in the direction indicated by the arrow, 28, Fig. 2. The agitating drum, 22, turns in the direction of the arrow, 29, Fig. 3. The agitating drum, 22, has upon its cylindrical surface wings, 24, which may be made of glass or wood or other suitable material. In addition to the wings, 24, as agitators, glass knobs, 23, 23, are placed upon the surface of the drum.

Wool contains more or less grease or oily substances—dirt, sticks, burs, tag-locks, etc., all of which it is desirable to eliminate from the wool before the product is in condition for the milling process.

Hair contains lime and other objectionable substances, such as lime, dirt, etc., which it is essential to separate from the hair, in order that it may be used for the filling of cushions, mattresses, car-seats, etc.

Cotton contains pieces of cotton-burs, cotton-seed, dirt, etc., all of which it is desired to separate, in order to enhance the value of the raw product.

When a suitable solution combined with electrical currents is employed, a gaseous action takes place in the tank containing the solution and the textile or fibrous articles contained therein. The electrolytic action causes the fibers of the substance under treatment to expand and separate, thereby giving the dirt, sticks, burs and other foreign substances a better opportunity to become relieved from the textile or fibrous substances under treatment.

The wool, hair, cotton, etc., placed in a solution of a density greater than that of water, aids such materials as heretofore described in being kept to a more or less degree in suspension throughout the treating solution, and, by so doing, a better opportunity is afforded for the hair, wool, cotton, etc., to expel the burs, sticks, dirt and other foreign matter, which

will become precipitated and fall to the bottom of the receiving tank or receptacle as the treating process proceeds.

The action of the electric current, when the positive and negative source of electricity is used in a suitably constructed tank or vat containing a solution of greater density than water, will be impeded in its progress through the solution, and, consequently, will act upon the textile or fibrous substances, if placed in a tank or vat containing a suitable solution, between the two poles of an electric current of the proper voltage and amperage. In the carrying out of the functions necessary to perform the desired washing and cleansing operations—in the case of wool, when a proper solution is used the grease will be extracted from the wool and be taken up in the solution and a portion of this wool grease will finally become deposited upon the positive plate in the tank or vat; said electrode or plate being connected to the positive source of electricity. In the case of hair, which is washed and cleaned in a different solution from that used for the washing and cleansing of wool, the lime and salts in the hair are separated from the hair by the action of the electricity passing through the tank or vat containing the solution and the hair, there being sufficient lime in the commercial hair to increase the density of the solution if water alone is used. The density of the water, having been increased by the salts and lime in the hair, causes a more rapid and gaseous action to take place in the tank or vat, whereby the hair is separated and cleansed in the solution, and, when removed therefrom and dried, becomes a clean, soft and valuable product, the market value being enhanced from one-half to one cent a pound.

I usually employ a direct current of electricity, obtained from any suitable source, varying in voltage and amperage, according to the size of the tank or vat or other treating device used and the amount of material—textile or fibrous substance—under treatment. I usually employ a direct current of from 50 to 500 volts and amperage of from 5 to 200.

The electrodes may be composed of nickel, copper, aluminium, or any suitable conducting material, and placed in the tank or vat in any suitable manner, but preferably one electrode at each end of the treating receptacle and connected to the positive and negative source of electricity.

The grease from wool to some extent is mixed with the solution, and, ordinarily when the solution is drawn off and allowed to stand for a few days, the oil will rise to the surface of the solution, from which it may be removed, and the solution can then be used again by slightly strengthening the same with new liquor.

The shape of the treating tank or vat shown, I have found to be the most desirable,

but I do not wish to confine myself to the use of the specific shape shown, or to any specific means of agitating the solution, or the material under treatment.

I claim as my invention:

1. In a washing and cleansing apparatus, a tank, a plurality of electrodes therein, an inclined bottom proper for said tank, and a screen bottom above the same.

2. In a washing and cleansing apparatus, a tank, a plurality of electrodes therein, an inclined bottom proper for said tank, a screen bottom above the same, and means for agitating the substance contained in said apparatus.

3. In a washing and cleansing apparatus, a tank, a plurality of electrodes therein, a bottom proper for said tank, a screen bottom above the same, said screen having a perforated portion and a corrugated portion, and an agitating drum adapted to act in conjunction with said corrugated portion.

4. In a washing and cleansing apparatus, a tank for holding an electrolytic solution; electrodes adapted to cause electric action in the said solution; conductors for uniting said electrodes with a source of electricity; an agitating drum mounted in said tank; means for rotating said drum; and a shield partition in said tank separating said electrodes from the main portion of said tank and the substances immersed in the solution contained therein.

5. In a washing and cleansing apparatus, a tank adapted to contain a bath, an inclined bottom to said tank, a screen bottom above the same, a plurality of electrodes in said tank, a rotating agitating drum in said tank, means for rotating said drum, and a shield partition in said tank separating said electrodes from the main portion of said tank and the substances contained within said bath.

6. In a washing and cleansing apparatus, a tank adapted to contain a bath, an inclined bottom to said tank, a false bottom above the same provided with a perforated portion at its highest end, a plurality of electrodes in said tank, a rotating agitating drum in said tank, means for rotating said drum, and a shield partition in said tank separating said electrodes from the main portion of said tank and the substances contained within said bath.

7. In a washing and cleansing apparatus, a tank adapted to contain a bath, an inclined bottom to said tank, a false bottom above the same provided with a perforated portion at its highest end, a plurality of electrodes in said tank, a rotating agitating drum in said tank, a corrugated portion beneath said drum, means for rotating said drum, and a shield partition in said tank separating said electrodes from the main portion of said tank and the substances contained within said bath.

8. In a washing and cleansing apparatus, a tank adapted to contain a bath; an inclined bottom to said tank, a false bottom above the same provided with a perforated portion
5 at its highest end, an outlet communicating with the chamber between said bottoms at its lowest point, a plurality of electrodes in said tank, a rotating agitating drum in said tank, a corrugated portion beneath said drum,
10 means for rotating said drum, and a shield partition in said tank separating said elec-

trodes from the main portion of said tank and the substances contained within said bath.

In testimony whereof, I have signed my name to this specification in the presence of 15 two subscribing witnesses, on this seventeenth day of March A. D. 1905.

GEO. D. BURTON.

Witnesses:

F. L. GIFFORD,
E. F. PHILIPSON.