

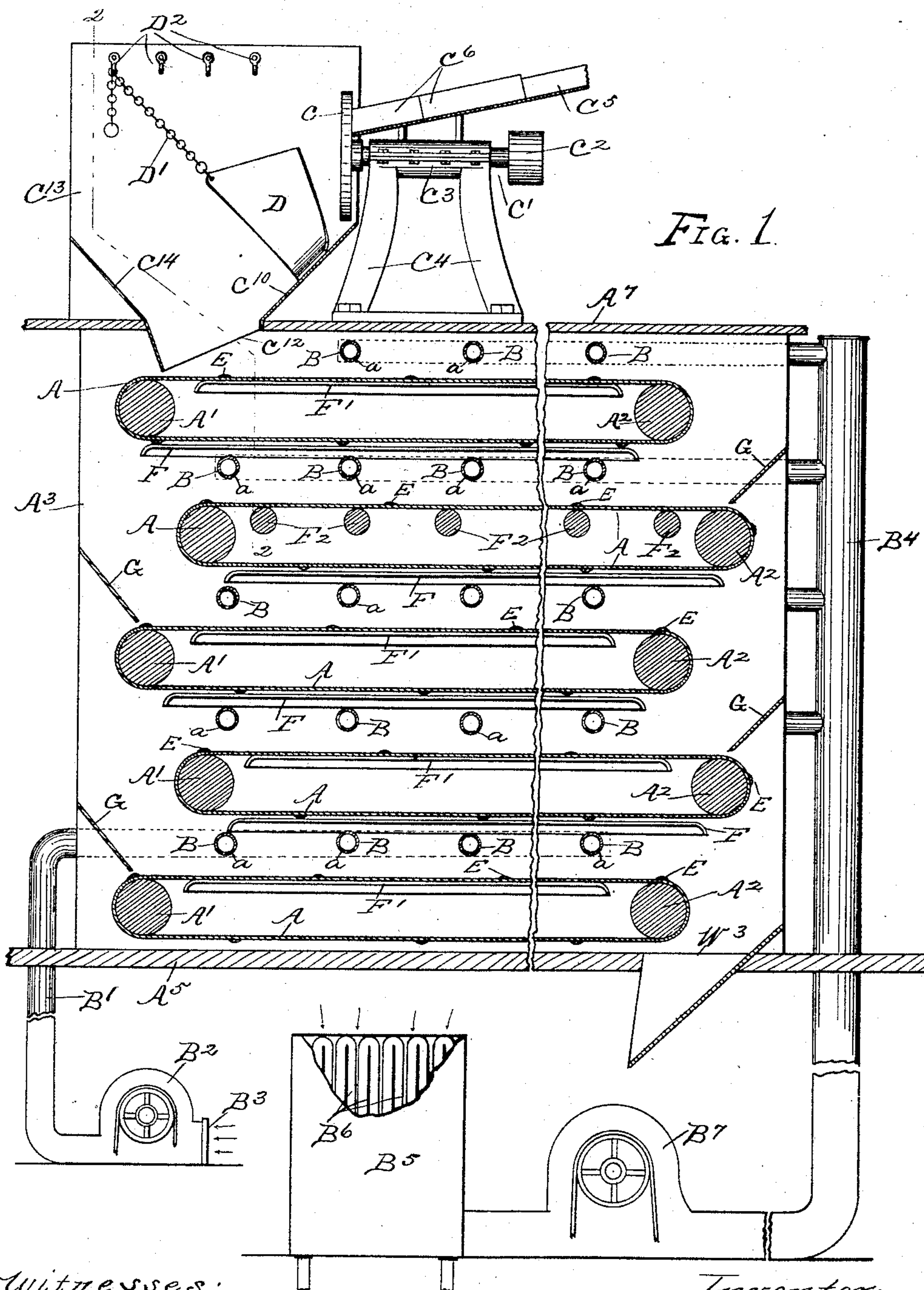
(No Model.)

2 Sheets—Sheet 1.

M. ANDRAE.
APPARATUS FOR DRYING SOAP.

No. 525,572.

Patented Sept. 4, 1894.



Witnesses:
A. E. Delaney
Henry Speck

Inventor:
Michael Andrae
by Mosher & Curtis
Attys.

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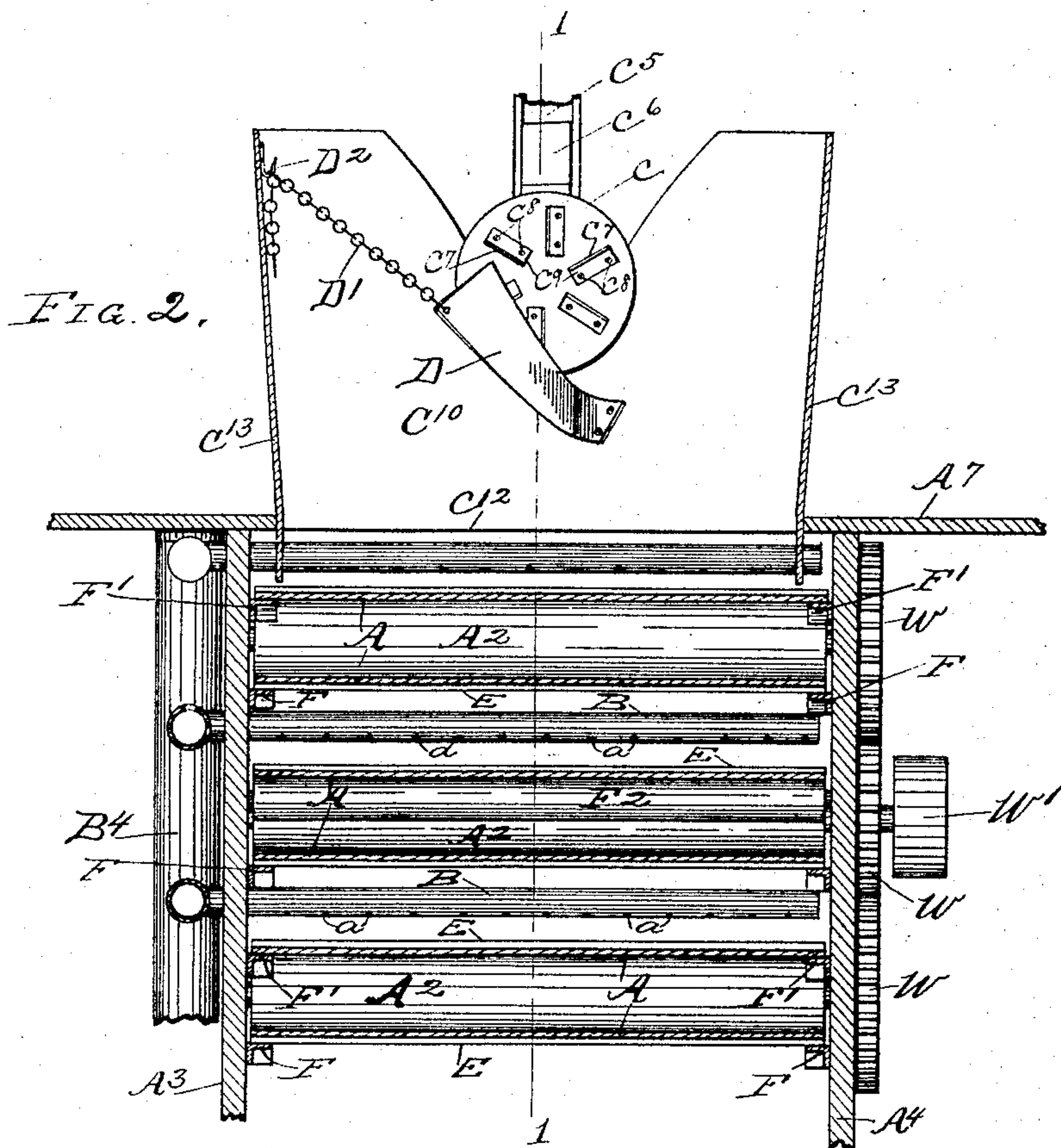
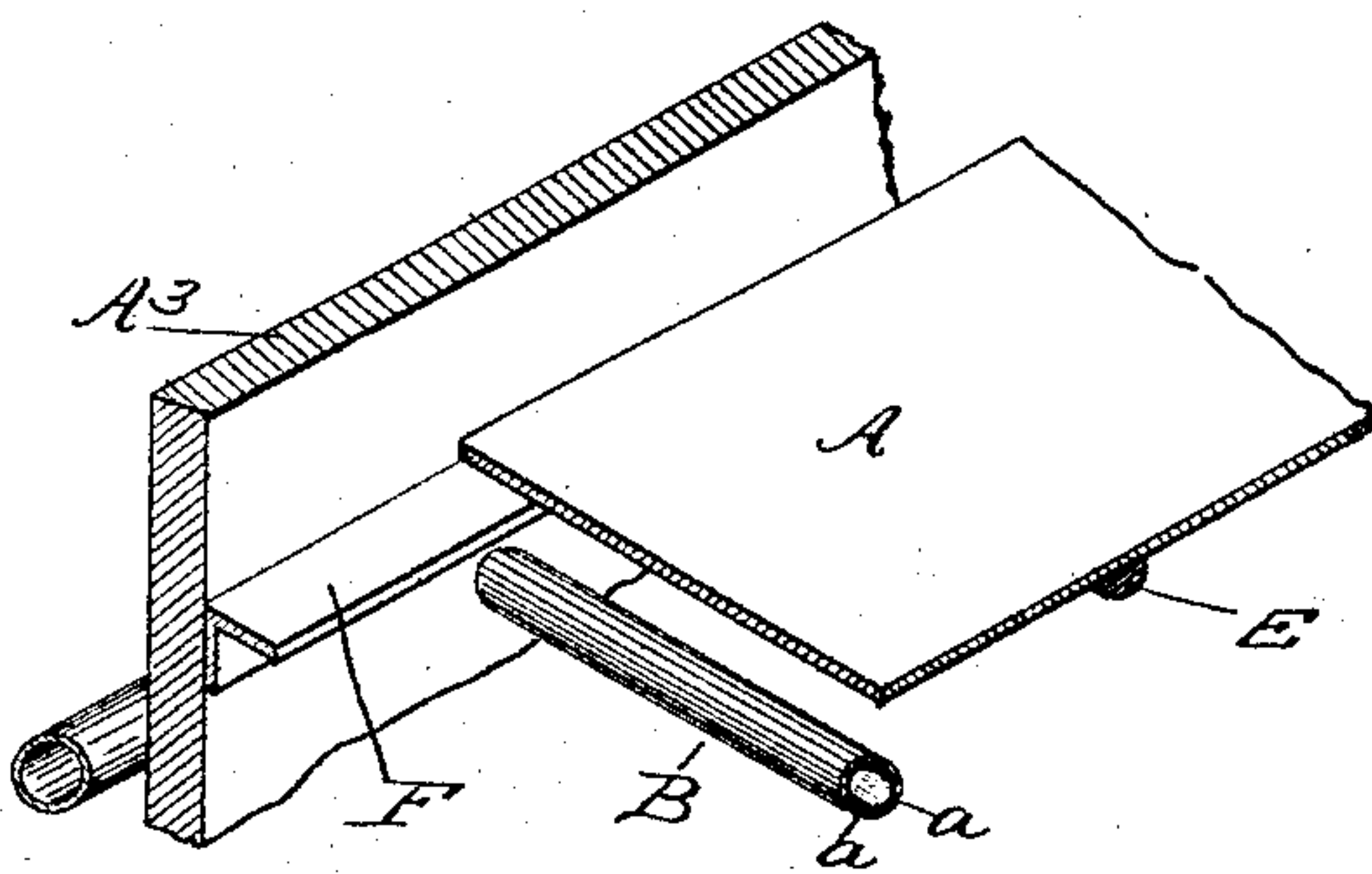


FIG. 3.



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UNITED STATES PATENT OFFICE.

MICHAEL ANDRAE, OF COHOES, NEW YORK, ASSIGNOR TO THE AMERICAN SOAP AND WASHOLINE COMPANY, OF SAME PLACE.

APPARATUS FOR DRYING SOAP.

SPECIFICATION forming part of Letters Patent No. 525,572, dated September 4, 1894.

Application filed October 9, 1893. Serial No. 487,562. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL ANDRAE, a citizen of the United States, residing at Cohoes, county of Albany, and State of New York, have invented certain new and useful Improvements in Apparatus for Drying Soap, of which the following is a specification.

My invention relates to such improvements and consist of the novel construction and combinations of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the letters marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view of my improved apparatus for chipping and drying soap partly in side elevation and partly in section, the section following the broken line 1—1, in Fig. 2, intermediate portions being broken away for convenience of illustration. Fig. 2 is a similar view partly in front elevation, the section following the broken line 2—2, in Fig. 1, the lower portion being broken away. Fig. 3 is a fragmentary view in perspective showing the relative positions of slat-supporting ways, air-pipes and slats.

The several endless carrier-belts, A—, are mounted upon rollers A'—, A²— which are rotary in bearings in the vertical side-walls A³—, A⁴— erected from a suitable support or floor A⁵—.

The carriers, located one above another, are approximately horizontal, that is each carrier has its supporting rolls in approximately the same horizontal plane, and are separated from each other sufficiently to afford room in the intervening spaces for a series of air-discharging pipes B— having discharge openings a— and extending transversely of the carrier-belts so as to occupy positions in the spaces approximately parallel with each other and with the carrier-rolls.

The discharge-pipes in the lower space branch from a cold-air pipe B'— which leads from the fan-blower B²— having a cold-air inlet at B³—. The discharge-pipes in the

other spaces branch from a hot-air B⁴— which leads from a hot-air box B⁵— containing the steam-coils B⁶—.

The hot-air pipe is provided with a fan-blower B⁷— which draws the hot air from the hot-air box and forces it along the hot-air pipe and from the discharge-pipes branching therefrom.

The steam-coils may be connected with the exhaust-pipe of a steam engine, not shown.

The chipping mechanism which may be of any known form, is located above the carriers upon a platform A⁷— supported by the vertical side-walls A³—, A⁴—. I have shown a disk C— fixed upon a shaft C'— provided with driving-pulley C²— and rotary in the bearing C³— supported by the uprights C⁴— bolted to the platform A⁷—. An inclined way C⁵— adapted to support and feed bars of soap C⁶— leads to the disk. The disk is provided with a series of apertures C⁷— each having an inclined wall to which is fastened by screws C⁸— a knife or bit C⁹— arranged like the bit of a bench-plane. As the disk is rotated the bits successively engage the bar of soap and shave off a thin piece called a chip. These chips slide down an inclined way C¹⁰— onto the upper carrier-belt, passing through the aperture C¹²— in the platform A⁷.

The sideboards C¹³— and front inclined board C¹⁴— serve to prevent the escape of any chips which chance to be projected beyond the inclined way C¹⁰—. The average direction taken by the chips varies according to the hardness of the bar of soap being chipped; and I provide a deflector D— made of a thin strip or sheet of flexible material, as leather or sheet-metal, which I secure at one end or edge to the inclined way C¹⁰— intermediately of the chipping disk and the upper carrier. By adjusting the upper or movable end of the deflector to the required position, I can regulate the distribution of the chips upon the carrier-belt and secure an approximately uniform distribution whether the chips are cut from green or comparatively dry soap bars.

As a convenient means for adjusting the deflector, I attach a cord or chain D'— to the

movable end of the deflector and secure the other end of the chain to one of a plurality of hooks, D^2 —fixed upon the side-board C^{13} —.

By selecting the proper hook and giving the chain the required length, I can adjust the deflector to any desired angle of inclination to produce uniform distribution of the chips.

The rolls at one end of each carrier are severally provided with gear-wheels W —fixed upon the rolls or shafts projecting from their ends and successively meshing with each other, as shown in Fig. 2. The shaft of one of the intermediate rolls is also provided with a driving pulley W' —fixed thereon. All of the rolls are rotated by imparting a rotary movement to the pulley-shaft, each roll having its rotary movement in a direction opposite to the direction of its neighboring rolls, so that the successive carriers travel in opposite directions.

Each carrier below the upper one projects beyond the discharging end of the carrier next above it. As will be understood from an inspection of Fig. 1, the chips fall upon the left-hand end of the upper carrier and travel thereon to the right, fall therefrom upon the second carrier and travel thereon to the left, fall therefrom upon the third carrier and travel thereon to the right, fall therefrom upon the fourth carrier and travel thereon to the left, fall therefrom upon the fifth carrier and travel thereon to the right, and fall from this carrier which is the lowest and last of the series, through the opening W^3 —into a suitable receptacle, not shown.

The inclined guides G —facilitate the delivery of the chips from one belt-carrier to another. Each carrier is provided on its outer side with a plurality of cross-slats E —secured to the belt at suitable intervals. The cross-slats not only strengthen the belt, but, by engaging the belt-supported chips, facilitate their transportation by the carriers. The air-discharge pipes being located just below the lower sections of the several belts, are liable to be engaged by the cross-slats on such sections when the belts become slack, as necessarily occurs when carriers of great length are employed. To prevent such contact and engagement of the slatted belts with the air-pipes, I provide the lower section of each belt with a pair of edge-supports or ways F —secured to the side-walls A^3 —, A^4 —, between the belt and the air-pipes below the same. Similar ways F' — may be employed to support the upper sections of the several belt-carriers; or, when desired, friction rollers may be substituted for, or used in connection with, such ways.

In Fig. 1, I have shown the upper section of the second carrier supported by friction rollers F^2 —. Any desired number of carriers may be employed, the lowest being exposed to a cold-air blast, and the higher ones to a hot-air blast.

It is well known to those skilled in the art that hard soap requires a long time to be-

come sufficiently hard for use, if allowed to dry by natural evaporation, and loses considerable weight by loss of water, a large quantity of which has entered into chemical combination with other elements to form the soap.

I have ascertained that, by chipping the green and comparatively soft soap, and subjecting the chips to hot-air drafts, I am able to cure or harden the soap in a comparatively short time and with comparatively small loss in weight or chemical change; but if the chips are packed or barreled while hot, there is danger of deliquescence, or massing of the chips. I therefore finally treat the chips to a cold-air blast which leaves them in fit condition for packing at once, thereby saving much time and storage room.

The chips are treated with hot air on all the carriers except the last by forcing hot air through the hot-air discharge pipes over such carriers, as before explained, and with cold air on the bottom carrier by forcing cold air through the cold-air discharge pipes over such carrier.

I am aware that an inclined reversible chute has been combined with a hopper for filling bags. I am also aware that both hot and cold air have been used in drying and cooling grain respectively and also that ways have been employed for supporting slatted belt carriers and such devices are not of my invention.

It is characteristic of my improvement as respects the simultaneous use of hot and cool air that the cool air is prevented from mingling with the warm air by its free escape laterally and by the air and chip guides G which prevent the cool air from being forced upwardly or the hot air downwardly in direct lines at the ends of the belts. The warm air loaded with moisture therefore freely escapes at the open sides of the drier and does not reach the level of the cool air pipes nor the cooled soap.

I am aware that devices for chipping soap are known and I do not claim such broadly. I have found that when soap was chipped and delivered directly to a hopper or to an inclined plane leading to a drying device that the chipped soap is liable to adhere to the chipper in a variable manner, owing largely to variations in the consistency or condition of the soap so that the chips do not fall with regularity but accumulate at intervals and irregularly until thrown off by centrifugal action. The loosely adherent chips are liable to accumulate at single points or lines and move in mass down the inclined feeding plane. The object of my deflector is to overcome this effect and for this purpose it is arranged obliquely both with respect to the operative surface of said plane and with respect to the angle of its inclination with the effect to break up the loosely adherent bunches of chips and permit some to pass above and some below the deflector while the main part is guided

toward the side opposite that to which the revolving chipper tend to cause an accumulation.

5 What I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for drying chipped soap the combination of a belt-carrier, a soap spreading device consisting of an inclined way situated above the carrier and having
10 fixed upon it a deflector situated obliquely with respect to its inclined operative surface, and means comprising a chipper for delivering the material upon the way above the deflector, the lower end of said deflector being
15 situated on the side opposite that to which the chipper tends to throw the soap, substantially as set forth.

2. In an apparatus for drying chipped soap the combination of a belt-carrier, a soap
20 spreading device consisting of an inclined way situated above the carrier and having fixed upon it a deflector, said deflector consisting of a flexible strip or sheet secured near

one end to a fixed support in the path of the falling chips and provided with means for
25 supporting the other end in adjusted positions, substantially as described.

3. In an apparatus for drying chipped soap the combination of a belt-carrier, a soap spreading device consisting of an inclined
30 way situated above the carrier and having fixed upon it a deflector situated obliquely with respect to its inclined operative surface and also with respect to the angle of its inclination, and means comprising a chipper for
35 delivering the material upon the way above the deflector, the lower end of said deflector being situated on the side opposite that to which the chipper tends to throw the soap, substantially as set forth.
40

In testimony whereof I have hereunto set my hand this 29th day of August, 1893.

MICHAEL ANDRAE.

Witnesses:

NELSON GILLESPIE,
FRANK C. CURTIS.