

No. 624,180.

Patented May 2, 1899.

**A. CONKLING.
MANGLE.**

(Application filed May 26, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

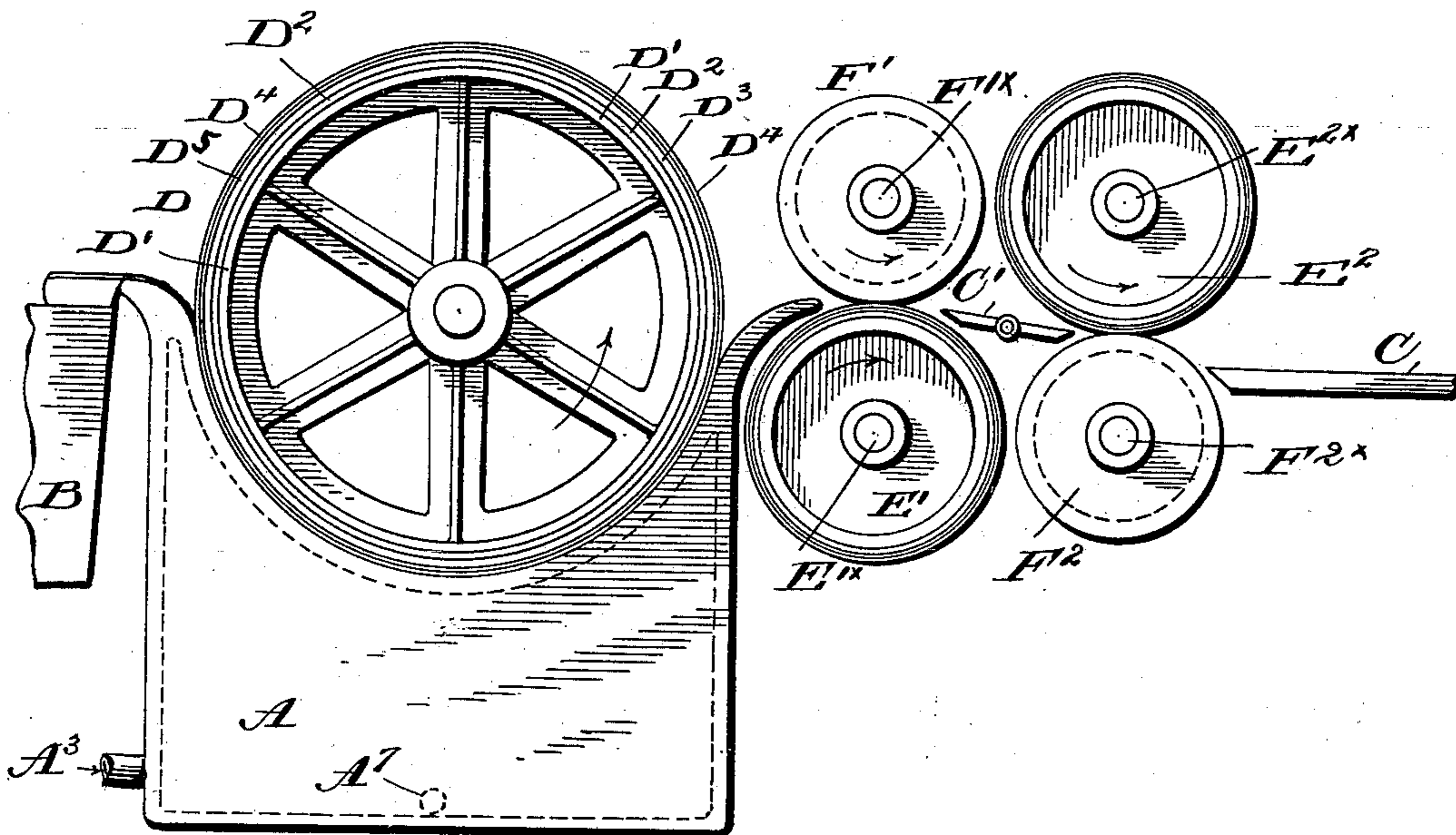


Fig. 3.

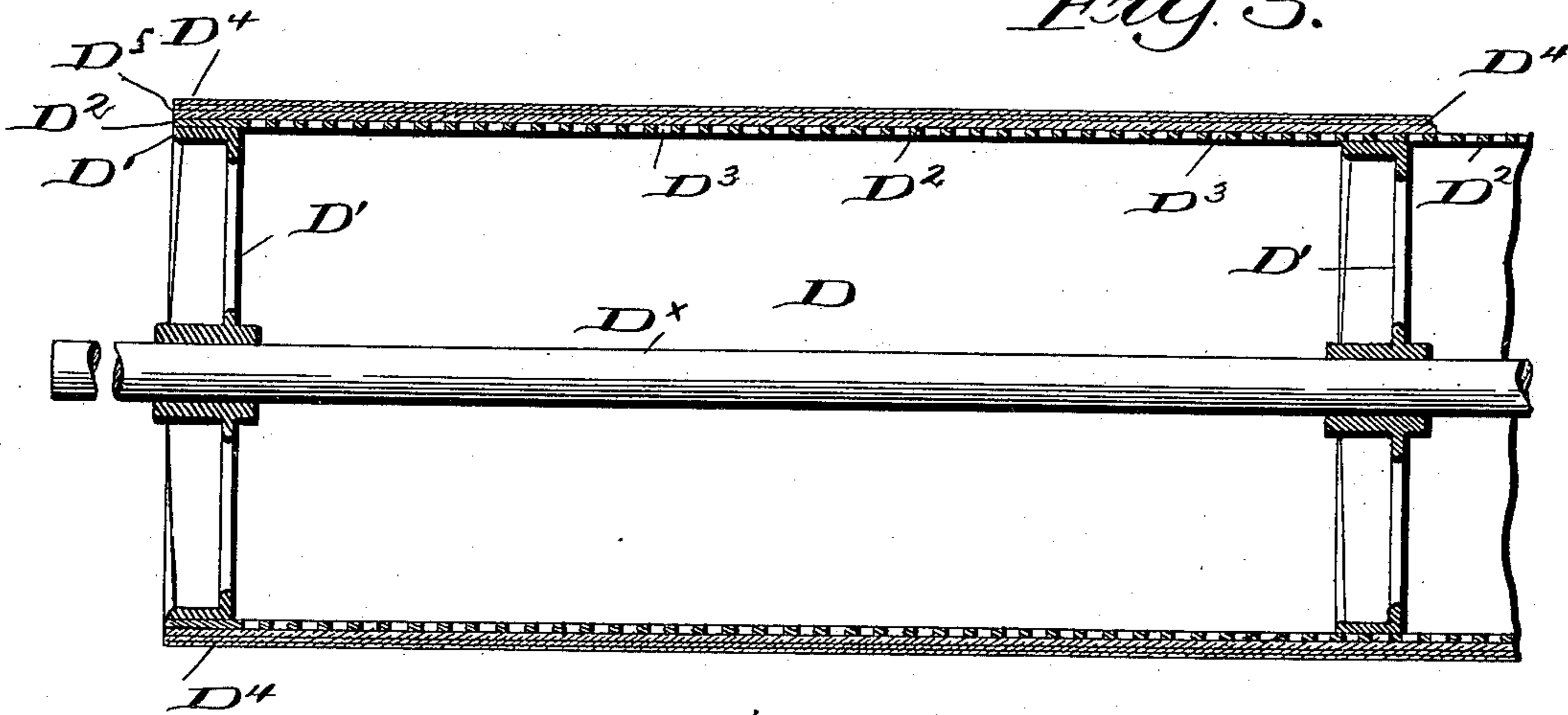
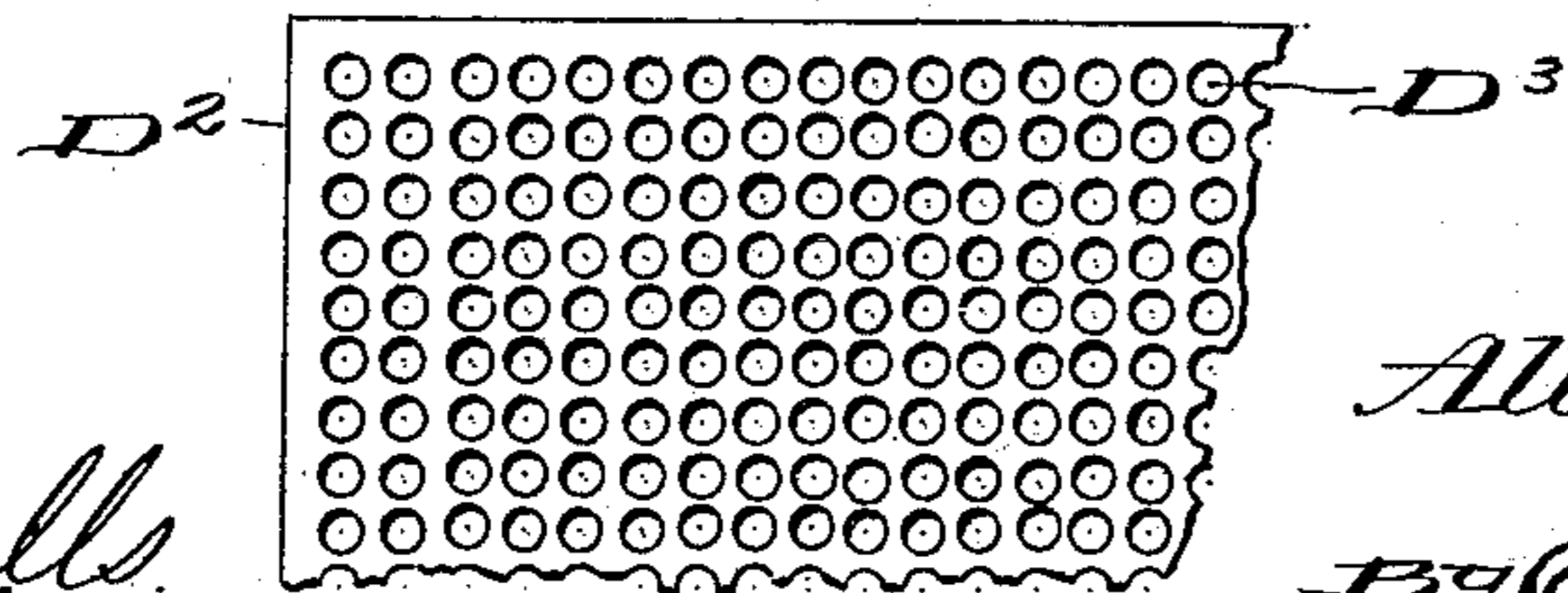


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALLEN CONKLING, OF CHICAGO, ILLINOIS.

MANGLE.

SPECIFICATION forming part of Letters Patent No. 624,180, dated May 2, 1899.

Application filed May 26, 1898. Serial No. 681,831. (No model.)

To all whom it may concern:

Be it known that I, ALLEN CONKLING, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Mangles, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to mangles intended for use in ironing the heavier class of goods or articles—such as heavy roller-towels, pillow-slips, bedspreads, blankets, and goods of similar sizes and weights—and which are usually ironed in an unstarched condition; and the object in view is to produce by machinery a certain softness and flexibility in the finished product which exists in goods ironed by domestic methods. While this is the class of goods intended to be operated upon by my invention, the same, however, is not restricted to such particular use, but may be adapted in size and arrangement for use upon a lighter and upon a still heavier class of goods, as desired.

In ironing bedspreads and other heavy goods there is a comparatively great amount of moisture within the spread, which must either be driven out by the action of the heated member of the ironing mechanism through which the spread is passed or said dampness must be absorbed by the clothing of the non-heated member, or, finally, said spread must be dried (superficially) by the action of the heated member of the ironing mechanism while moisture still remains within the spread. The difficulties heretofore existing in ironing this class of goods are as follows: first, the expenditure of a large percentage of the heat of the heated member of the ironing mechanism in vaporizing moisture at the surface of the goods in contact therewith; second, vaporizing the moisture absorbed from the goods by the clothing of the non-heated member of the ironing mechanism, and, third, ironing the surface of the goods before the moisture is wholly driven from the inner fiber of the goods, whereby the finished product is stiffened and harsh. To produce soft, flexible (unstarched) ironed goods, the moisture must be expelled from the goods. Moisture in any material quantity must not remain within the body or inner texture of

the goods while being ironed, as this makes them harsh and stiff when ironed. Merely vaporizing the moisture from the surface of the goods is insufficient. The problem presented in ironing this class of goods is therefore to reduce the dampness upon, within, and throughout the article to be ironed to a satisfactory degree before the ironing process is performed by the machine. In the prior art in ironing this class of goods it has been customary to employ ironing mechanism consisting of a stationary ironing-surface in the form of a steam-chest, cooperating with a clothed rotary roll or member, whereby the goods are exposed to an extended heated ironing-surface. This extension of the heated surface serves the drying function of ironing mechanism to a much greater degree than where both of the members are rotary; but the objection is that in the use of such an extended heated surface it is practically impossible to obtain the desired quality of finish in the ironed goods. In this construction there is unquestionably a dragging action upon the goods, which tends to injure the same, so that while a large drying capacity exists in such machines they not only tend to injure the goods, but fail to give the desired finish to the same when ironed thereby. The problem presented is therefore the provision of an extensive drying capacity by the employment of the stationary-steam-chest form of ironing mechanism and the production of a desired finish by the employment of the rotary form of ironing mechanism and the arrangement of one with the other in such a manner as to both assist in conducting the goods from one to another steam-chest member where more than one is used and to give the desired finish to the ironed goods upon one or both surfaces thereof. The solution of this problem is the primary object of my invention, and other objects and advantages will appear in the following description, and the novel features of the invention will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a transverse central vertical section of my invention. Fig. 2 is a side elevation of a simplified form of the same. Fig. 3 is a central longitudinal vertical section of the clothed rotary ironing mem-

ber employed, and Fig. 4 is a detail in plan of the shell of the clothed rotary member.

Like letters of reference indicate like parts throughout the several figures of the drawings.

A represents a steam-chest having the concave ironing-surface A' , the guiding-horn A^2 , which may be formed on or attached to the chest, and the inlet A^3 and outlet A^4 for steam or any other heating medium which may be employed for heating said chest. When the chests A are employed in series, the opening A^4 of the last chest of the series may be closed with a plug A^5 and a connecting-pipe A^6 may be extended from one chest to another of the series. An outlet A^7 , with a suitable closure, may be employed to draw off any water resulting from condensation of the steam. All of the rollers employed, as also all of the steam-chests, are to be mounted and supported in any suitable framework, and the necessary rotation in proper direction of the rollers is to be caused by any suitable system of gearing—for example, that illustrated by dotted lines in Fig. 1. These are matters entirely within the province of the mechanic accustomed to the construction of machinery of this class, and any further description of the same is deemed unnecessary.

B is a feed-box which may be supported in any suitable manner upon or adjacent to the first steam-chest of the machine, and C represents a receiving table or apron for the goods as they pass from the machine in an ironed condition.

C' is a table or conductor arranged between two sets of rotary ironing mechanisms for conducting the goods from one to the other in the usual well-known manner.

D is the rotary member or clothed drum employed with the steam-chest A.

D^x represents a shaft mounted concentric with the concave ironing-surface A' of the steam-chest, and upon this shaft are mounted spiders D' in sufficient number within and to support the sheet-metal shell D^2 , which constitutes the body of the cylinder. This shell is perforated, as at D^3 , throughout its entire length, as clearly indicated in Fig. 4. The clothing of the cylinder D consists of a felt covering D^5 and an outer covering of several plies D^4 , usually of cotton cloth. The function of this clothing is to absorb moisture from the goods being ironed.

Now it will be noted that as the goods pass along the concave ironing-surface A' of the steam-chest the moisture is absorbed by the clothing of the cylinder and passes in the form of a vapor through the apertures D^3 of the shell into the large, ample, and extended air-space within the drum, from whence it passes into the outer atmosphere. The moisture is driven from the goods into the clothing of the drum, and the retention of the moisture in the clothing is obviated, so that the steam-chest member of the machine presents to the goods an extended drying-sur-

face, and the drum member of this portion of the machine is provided with an extended evaporating-surface, whereby, as before stated, the moisture is expelled from the clothing of the drum.

Following the steam-chest member of the machine I arrange a pair of rotary ironing members E and F. The member E is a drum mounted upon a shaft E^x and otherwise constructed and clothed exactly like the drum D, while the member F is a hollow ironing-roller, which is to be heated by steam or otherwise and mounted upon a shaft F^x . Following the second steam-chest ironing member of the machine is a second set of rotary ironing-rollers E' and F' , mounted, respectively, upon shafts E'^x and F'^x , and following these is another pair of rotary ironing-rollers E^2 and F^2 , mounted, respectively, upon shafts E^{2x} and F^{2x} . It will be noted that the clothed roller E^2 of the last set is arranged over the heated ironing-roller F^2 , while the clothed roll E' of the first of these two sets is arranged beneath its heated ironing-roller F' for the purpose of bringing a heated ironing-roller upon the opposite sides of the goods as they pass through said portion of the machine. In all of the clothed rollers I secure the advantage of an extended capacity of drying the goods and the clothing of the clothed roller by employing the perforated shell communicating with the interior of the roller.

In Fig. 2 I have illustrated an arrangement of the two principal elements of the machine whereby the class of goods somewhat lighter than those hereinbefore referred to may be ironed, such goods, however, being of such size and weight as to absorb in the washing process and to retain, after being taken from an extractor, more dampness and moisture than can readily be taken from the goods by the use of ordinary rotary ironing mechanism. In other words, Fig. 2 represents a smaller machine than Fig. 1, the drying capacity being adapted to goods which do not require more than a single passage over or along the ironing-surface of one steam-chest.

It is apparent that the arrangement of the steam-chest and its drum in front of a rotary ironing mechanism, there being provided a suitable guide to direct the goods from the chest to the rotary ironing mechanism, will provide an increased drying capacity to the apparatus, and this whether or not the shell of the drum or the clothed member be perforated. For the purpose of facilitating the withdrawal of moisture from the goods and for the purpose of preserving the clothing of the drum from deterioration and for the further purpose of utilizing the greatest percentage of the heat of the steam within the chest I prefer to perforate the shell of the drum. I therefore apprehend as within my invention the arrangement and coöperation, in a continuous process of ironing goods of the class referred to, of a concaved steam-chest and coöperating clothed drum having an extended

drying-surface with rotary ironing-rollers, one of which is heated, having a limited extent of drying-surface and arranged in feeding relation to said steam-chest and drum, together with suitable gearing for rotating the parts in the proper direction to feed the goods, as described, whereby the advantages of each form of mechanism are secured and the machine simplified and rendered capable of producing the desired finish, together with a greatly-increased capacity for work as regards both quantity and quality.

Various changes in details of construction may be made without a departure from the invention.

What I claim as new is—

1. In an ironing-machine, the combination with a steam-chest having a concave ironing-surface and a clothed drum operating upon said surface, of a pair of rotary ironing-rollers, one of which is heated, said rollers being arranged in feeding relation to said steam-chest as described and suitable gearing for rotating said drum and rollers in the proper direction to cause the passage of goods over the ironing-surface of the steam-chest and through between said ironing-rollers; substantially as specified.

2. In an ironing-machine, the combination with a steam-chest having a concave ironing-surface, and a guiding-horn, of a drum having a perforated shell and suitable clothing, a steam-heated roll, and a cooperating clothed roll arranged to receive goods from the steam-chest; substantially as specified.

3. In an ironing-machine, the combination of a steam-chest, a clothed perforated drum cooperating therewith, a guide, a rotary steam-heated ironing-roll, a clothed perforated drum cooperating therewith, and gearing for rotating the drums and roll in the desired direction; substantially as specified.

4. In an ironing-machine, the combination with a steam-chest, of a clothed drum cooperating therewith, inverted pairs of rotary ironing mechanism, suitable guides, and gearing for rotating the drums and ironing-rolls in the desired direction; substantially as specified.

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

ALLEN CONKLING.

Witnesses:

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