O. L. OWEN.

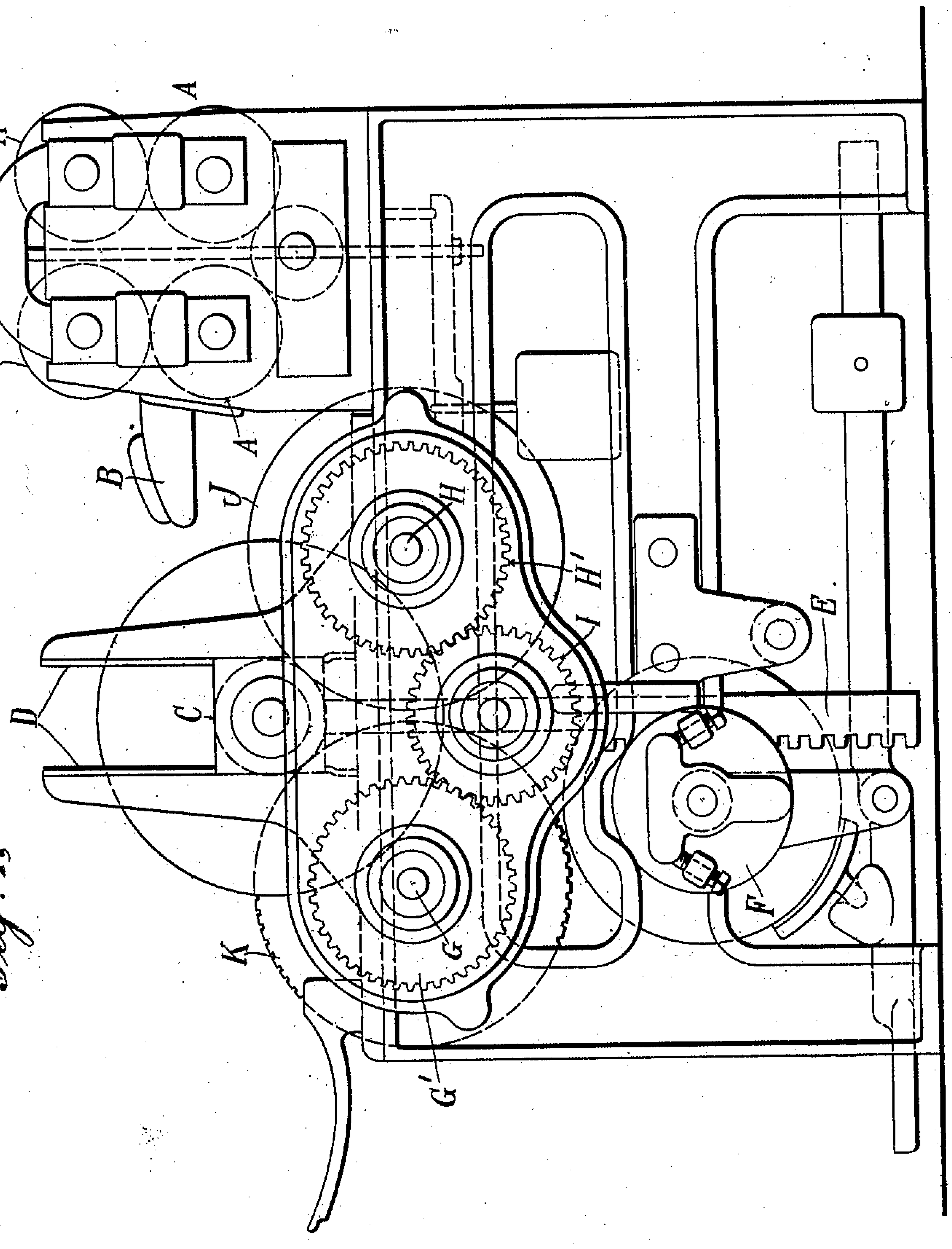
COTTON LAP HEAD.

APPLICATION FILED NOV. 20, 1908.

983,306. Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.

Fig: 1.



Witnesses:

Oscar L. Owen Inventor

By Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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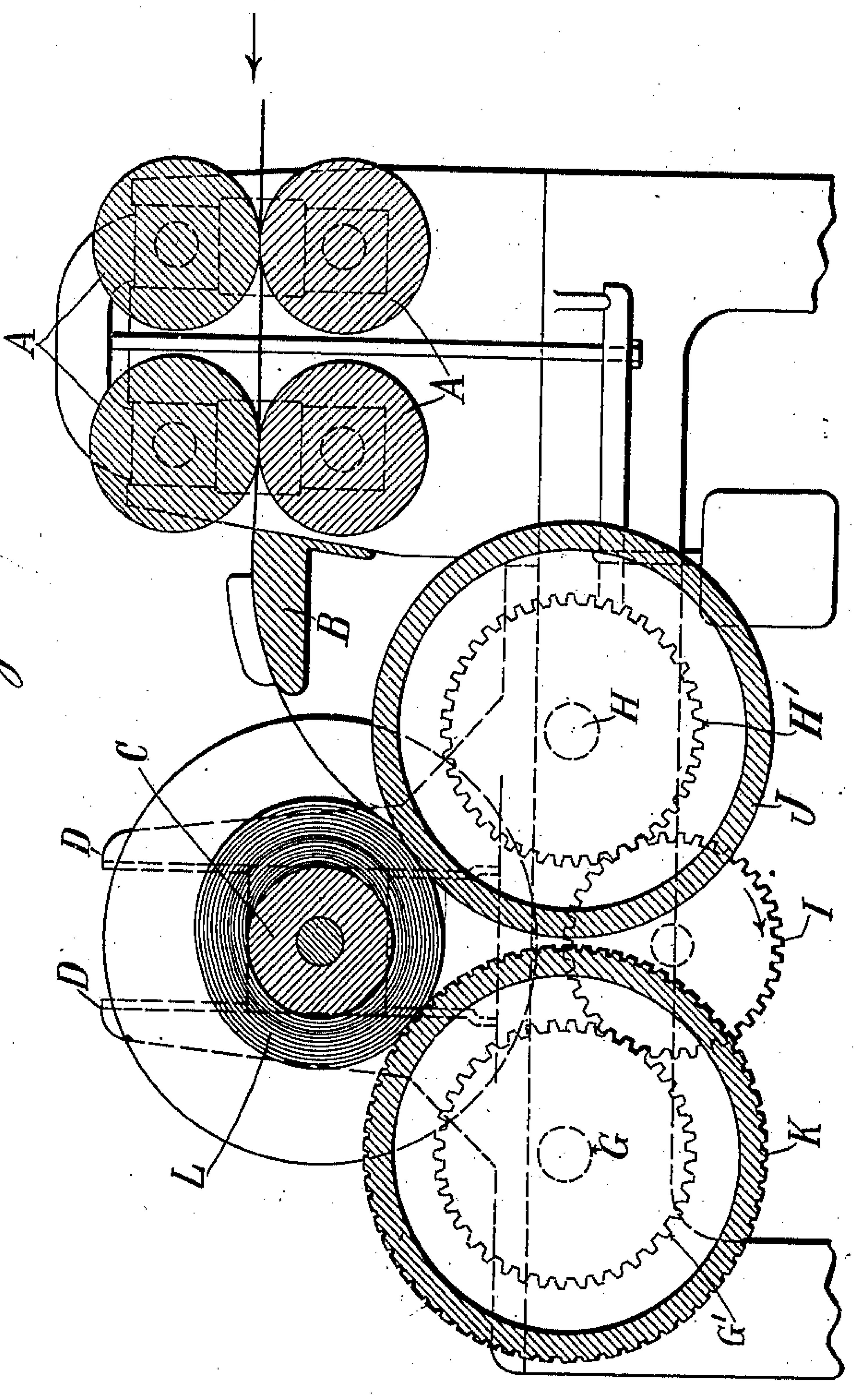
2 SHEETS—SHEET 2.

Fig: 2,



Witnesses:
[signature]
[signature]

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Inventor.

By Attorney.
[signature]

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

OSCAR L. OWEN, OF WHITINSVILLE, MASSACHUSETTS, ASSIGNOR TO THE WHITIN MACHINE WORKS, OF WHITINSVILLE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

COTTON LAP-HEAD.

983,306. Specification of Letters Patent. **Patented Feb. 7, 1911.**

Application filed November 20, 1908. Serial No. 463,565.

To all whom it may concern:

Be it known that I, OSCAR L. OWEN, a citizen of the United States of America, residing at Whitinsville, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Cotton Lap-Heads, of which the following is a full, true, and concise specification.

The invention is an improvement in lap-heads or machines for winding ribbons or laps of cotton into rolls such as are used to supply combing or other machines, and the purpose of the improvement is to enable such machines to produce, satisfactorily, larger rolls of lap, that is to say, rolls of larger diameter, than have hitherto been practically obtained therefrom.

The invention is capable of application to existing machines without rearrangement or addition of extra parts, and is herein shown as applied to an ordinary cotton lap-head of familiar construction.

Figure 1 of the drawings filed herewith shows a side elevation of such a machine, and Fig. 2 is a vertical longitudinal section thereof, sufficient to indicate the application of my invention thereto.

The cotton lap, supplied from the usual set of drawing rolls A, passes over the feed-apron B and from thence to the core or spool C upon which it is to be wound, as indicated in the drawing. The spool receives its rotary motion from the two winding drums J and K upon which it is supported, and is guided at its ends by the vertical ways D, D, so that it may rise as the lap rolled upon it increases in size. Pressure is applied to the roll during the process of winding by means of the depending rack-bar E which is connected to the spool shaft and engaged by the presser mechanism F. The winding drums J and K are carried respectively on the cross-shafts H and G, and the latter are geared together by means of their gears H′ G′ and the idler I so that when power is applied, the said drums rotate in the same direction and with equal angular velocities. The foregoing construction and its manner of operation are well known and will be recognized by those familiar in this art.

Prior to my invention and so far as I am aware, the rolls of lap formed on apparatus answering to the above description or operating in the same way, have been limited in diameter to about $10\frac{1}{2}$ inches, and any material excess of such dimension has resulted in the sticking or merging together of the convolutions of the roll to such an extent as to destroy or seriously disturb the continuity and evenness of the unrolled lap and hence to destroy the usefulness of the roll as a source of supply. I have found that a certain relationship can be established between the two winding drums J and K, the other conditions remaining the same, which will permit the winding of the lap to be safely and satisfactorily continued until the diameter materially exceeds $10\frac{1}{2}$ inches, the increase thus obtained in the diameter representing relatively a much larger increase in the amount of cotton contained in the roll, since the latter is proportional to the difference in the squares of the old and the increased diameters. In carrying out my invention I provide the forward winding drum, marked K, with a slightly larger total peripheral surface than the surface of the rear drum J, by forming on it a series of longitudinal scorings or flutes such as are common to this class of machine and as shown on the drum K in Fig. 2, while the other or rear drum is unfluted and smooth or polished. By thus adjusting the surface proportions of the two drums, their diameters remaining the same, a material improvement is at once effected in the firmness of the product roll, and the layers or convolutions thereof are found to be well defined and cleanly separable, at diameters exceeding $10\frac{1}{2}$ inches, but the best results and larger diameters can be obtained by a further adjustment of proportions which consists in slightly reducing the diameter of the forward drum K (measured from the top of the flutes) so that while its total peripheral surface area, including the flutes, may still remain larger than, or equal to, the total surface of the smooth rear drum, its surface speed will be somewhat less, due to the decrease in its diameter—the gears G′ and H′ continuing to have equal angular motion as above stated. For machines of standard size, diameters of $16\frac{1}{4}$ inches for the forward fluted drum and $16\frac{3}{8}$ inches for the rear smooth drum, will produce in practice satisfactory lap rolls of $16\frac{1}{2}$ to 17 or more inches in diameter, as compared with a maximum diameter of about $10\frac{1}{2}$ inches

from the old machine under the same conditions, as above stated. For this dimension, the flutes on the forward drum may be $\frac{1}{32}$ inch deep by $\frac{3}{32}$ inch wide and spaced apart about $\frac{11}{32}$ inch as usual. It will be observed that the difference in the surface speeds of the two drums is represented by the ratio of their diameters, that is to say, the ratio of $16\frac{1}{4}$ to $16\frac{3}{8}$.

The result above described is believed to be due to the superior purchase which the forward drum has upon the cotton roll by reason of its fluted surface, whereby a slight amount of slippage is caused to take place between the smooth drum and the lap, resulting in a smoothing effect on the latter, which tends to keep each of the several layers distinct and separate from adjacent layers.

What I claim is the following:

1. The combination in a cotton lap head of a fluted forward winding drum and an unfluted rear winding drum, said drums serving jointly to support the roll of lap and impart rotary motion thereto.

2. The combination in a cotton lap-head, of two winding drums forming the support and driving means for the roll of cotton lap, the forward of said drums being fluted and having a less surface speed than the other drum.

3. The combination in a cotton lap-head, of two winding drums adapted for jointly supporting and driving the roll of lap, the forward winding drum having a total peripheral surface equal to or greater than that of the rear drum and having a less surface speed than said drum.

4. In a cotton lap-head, the combination of two winding drums adapted for jointly supporting and rotating the roll of lap, the surface speed of the forward drum bearing relation to the surface speed of the rear drum, in substantially the ratio of $16\frac{1}{4}$ to $16\frac{3}{8}$.

5. In a cotton lap-head, the combination of two winding drums adapted for jointly supporting and rotating the roll of lap, and having equal angular movement, the forward drum being fluted and having its diameter proportioned to the diameter of the rear drum in substantially the ratio of $16\frac{1}{4}$ to $16\frac{3}{8}$.

6. In a cotton lap-head, the combination with the forward winding drum having a total peripheral surface equal to or greater than the surface of the rear winding drum, and having a less diameter than said rear drum.

In testimony whereof, I have signed my name to the specification in the presence of two subscribing witnesses.

OSCAR L. OWEN.

Witnesses:
CHESTER C. LAMB,
LEVI A. FORD.