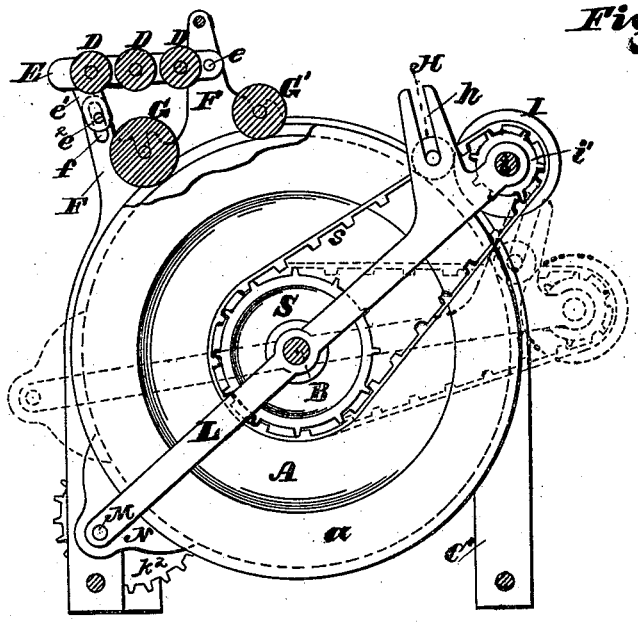
2 Sheets—Sheet 1.

H. N. RANGE.

Lapping-Machines.

No. 199,379. Patented Jan. 22, 1878.

Fig. 1



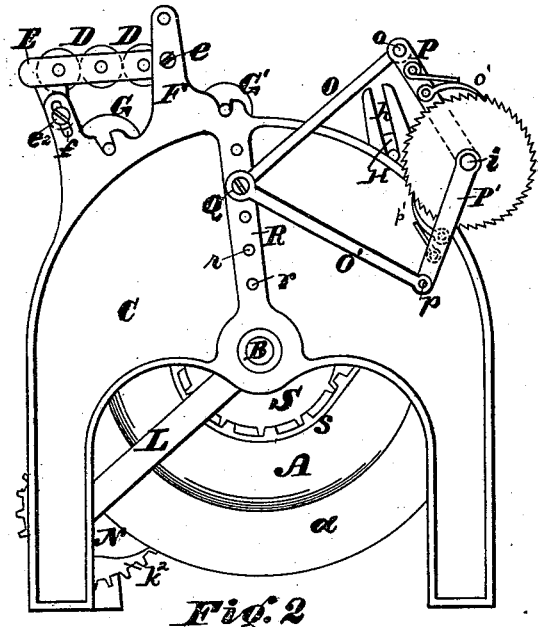


Fig. 2

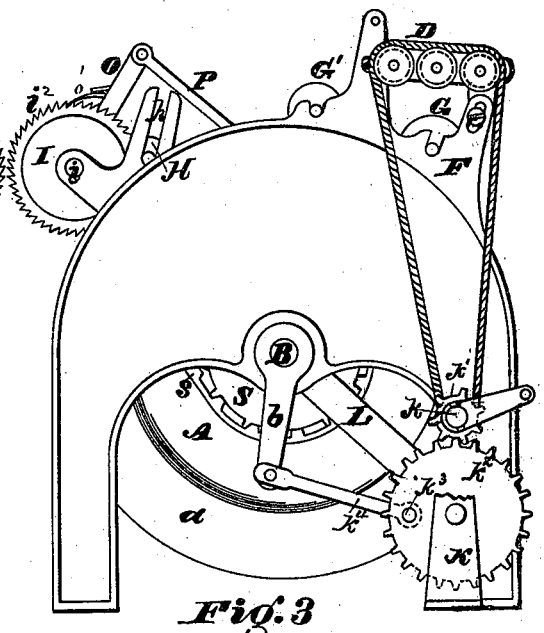


Fig. 3

Witnesses

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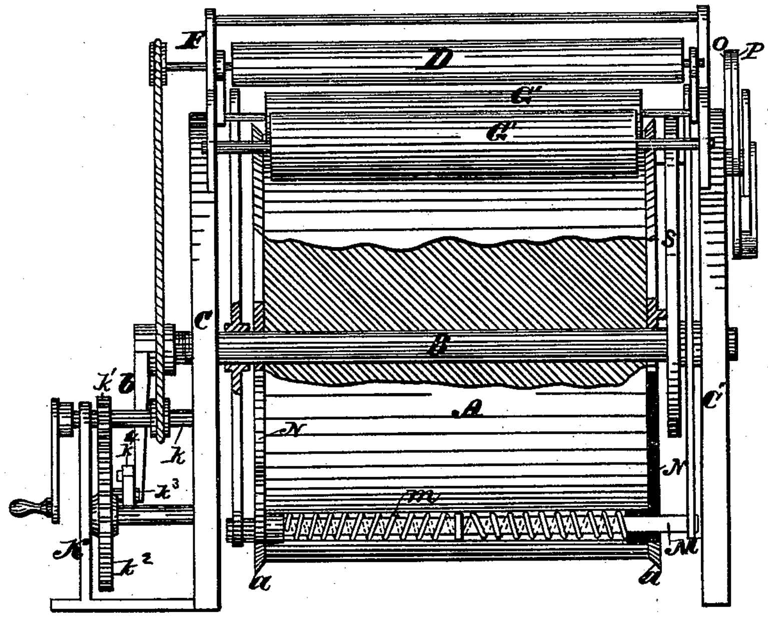

Fig. 4

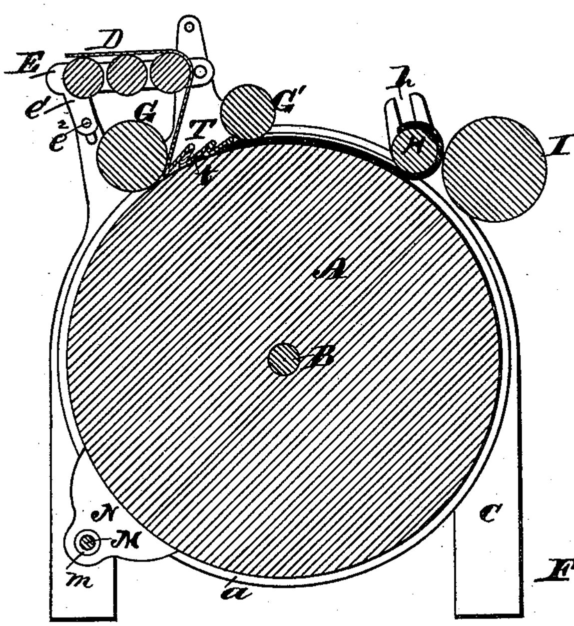

Fig. 5

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UNITED STATES PATENT OFFICE.

HERCULE N. RANGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM H. FRASIER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN LAPPING-MACHINES.

Specification forming part of Letters Patent No. **199,379**, dated January 22, 1878; application filed May 26, 1877.

To all whom it may concern:

Be it known that I, HERCULE N. RANGE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Lapping-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a transverse vertical section. Figs. 2 and 3 are side elevations. Fig. 4 is a rear view, partly in section. Fig. 5 is a transverse vertical section.

My invention consists in the peculiar construction and combination of parts hereinafter described, constituting a machine for forming lapping from the web or sliver received from the carding-engine.

Referring to the accompanying drawing, A designates a cylinder or drum, which is arranged to turn loosely on a shaft, B, which has its bearings in frames or arbors C C′, constituting the sides of the machine. D D D are feed-rollers, having journal-bearings in bars E E. The bars E E are pivoted at *e e* in brackets F F, sustained on the frames C C′, and are formed with lugs e^1, fastened by screws e^2, which pass through slots *f* in the brackets F F. By this means the feed-rollers D D D may be adjusted relatively to the drum A.

G G′ are pressure-rollers, having bearings in the brackets F F. Said rollers may be solid metal rollers, or they may be weighted or provided with spring-bearings, which will press them toward the drum A, their object being to fold the web and compress the lap on said drum.

H represents the roller on which the lapping is wound, and I a friction-roller for causing said lapping to be wound not too loosely on the roller H. K is an arbor, supporting a shaft, *k*, which holds a fast pinion, k^1, gearing with a wheel, k^2. Said wheel k^2 has a wrist-pin, k^3, which is connected, by a pitman, k^4, with a crank-arm, *b*, made fast on the shaft B.

By revolving the shaft *k* a rocking motion is communicated to the shaft B and to the arms L L, which are fast on said shaft. M is a rod connecting said arms, said rod being encircled by a spiral spring, *m*, which exerts its force against two shoes, N N, through which said rod passes, causing said shoes to bind against the flanged heads *a a* of the drum A, this mechanism thus constituting a friction brake or dog. On the opposite ends of said arms the rollers H and I are sustained, the journals of the former resting loosely in elongated slots *h h*, while the shaft *i* of the latter is provided with a pulley, i^1, and ratchet i^2.

O O′ P P′ are levers, articulated at *o* and *p*, being pivoted on the shaft *i* and on the screw Q, which is fastened in one of the adjusting-holes *r* in the plate R, which forms part of or is secured to the side frame C. The rocking action of the bars L L causes the levers O O′ P P′ to be extended and contracted in the manner of a lazy-tongs, thus communicating, through the medium of the spring-pawls *o′ p′*, a continuous forward motion to the roller I.

S is a pulley fast on one of the heads of the drum A, and connected with the pulley i^1 by means of a chain, *s*. Said chain conveys motion to the pulley S from the shaft *i*, causing the cylinder or drum A to progress slightly forward at each oscillation or rocking communicated to it by the arms L L, the friction-brake N preventing said cylinder from passing, by momentum, beyond the distance which it is caused to move by the chain *s*.

The operation is substantially as follows: The web or sliver from the card is received upon the feed-rollers D D D, and falls upon the cylinder or drum A. The oscillating motion of the cylinder in one direction carries said web (shown at T) under the roller G, by which it is lapped or doubled, as shown at *t*. The reverse oscillation of the cylinder A carries the folded material under the pressure-roller G′, where the formation of the lapping is perfected, the material passing thence to the lap-roller H, on which it is wound. After each oscillation of the drum A said drum is caused to make a slight advance toward the roller H by means of the chain-connection *s*. The extent of the lap and motion of the cylinder A under the influence of the chain *s* is governed by the adjustment of the pin or

screw Q in the plate R. The motion communicated to the roller I, by the means already described, being communicated to the roller H by frictional contact, as shown plainly in Fig. 5, gives the necessary rotation for winding purposes to said roller H, and said contact also prevents the lapping from winding too loosely. As soon as the roller H is filled with lapping it is lifted out of position, and another similar roller substituted for it.

By dispensing with one side or pair of the lazy-tongs levers—say, O′ P′—and retaining the other side or pair—say, O P—the motion communicated to the rollers H and I will be intermittent, the cylinder or drum A advancing on its axle under the influence of the chain *s* correspondingly; but by retaining the two pairs of levers, as shown in the drawing, the motion of said levers will be continuous, and the drum A will keep advancing or turning on its axle when oscillating in either direction.

What I claim as my invention is—

1. The combination of the cylinder A and mechanism, substantially as described, for oscillating the same with the rollers G G′, substantially as shown and described.

2. The combination of the cylinder A and mechanism, substantially as described, for oscillating the same, feed-rollers D D, and pressure-rollers G G′, substantially as shown and described.

3. In combination with the oscillating cylinder A, turning loosely on the shaft B, the arms L L, fast on said shaft, and the friction brake or dog M N, substantially as shown and described.

4. In combination with the cylinder A, the winding-roller H, friction-roller I, and arms L L, substantially as shown and described.

5. The combination of cylinder A, loose on the shaft B, shaft *i*, pulleys i^1 and S, with chain *s*, substantially as shown and described.

6. In combination with the roller I and mechanism, substantially as described, for imparting a vibratory motion to the same, the shaft *i*, sustaining the ratchet i^2, the levers O P, and pawl *o*′, substantially as shown and described.

7. In combination with the roller I, mechanism for vibrating same, shaft *i*, and ratchet i^2, the lazy-tong levers O P, and pawl *o*′, the adjusting-plate R, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of April, 1877.

HERCULE N. RANGE.

Witnesses:
GEO. C. SHELMERDINE,
SAML. J. VAN STAVOREN.