(No Model.)

R. COWEN.

KNEADER FOR INDIA RUBBER, &c.

No. 357,700. Patented Feb. 15, 1887.

Fig:1.

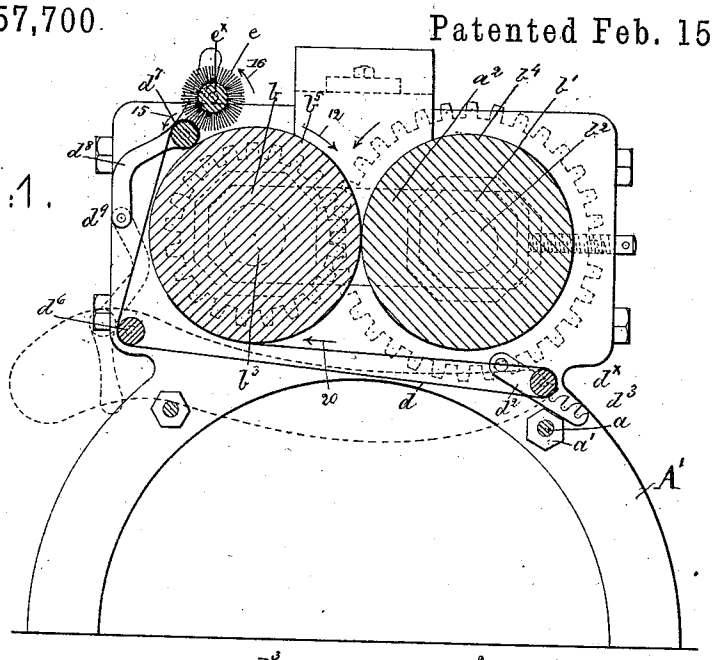
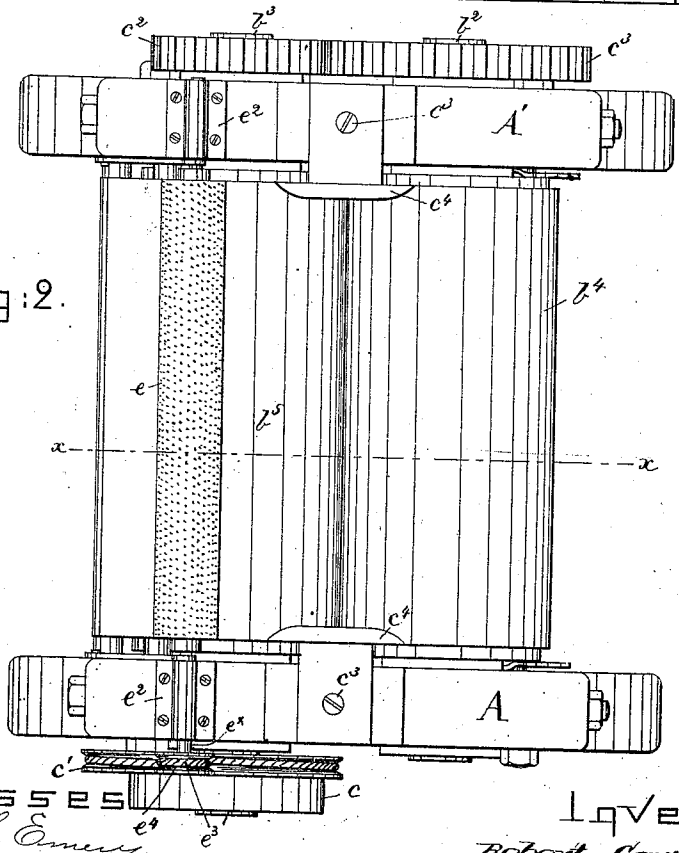


Fig:2.



Witnesses
Fred L. Emery
John F. C. Brinkerhoff

Inventor.
Robert Cowen.
by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

ROBERT COWEN, OF CAMBRIDGEPORT, ASSIGNOR TO THE BOSTON WOVEN HOSE COMPANY, OF BOSTON, MASSACHUSETTS.

KNEADER FOR INDIA-RUBBER, &c.

SPECIFICATION forming part of Letters Patent No. 357,700, dated February 15, 1887.

Application filed July 31, 1886. Serial No. 209,648. (No model.)

To all whom it may concern:

Be it known that I, ROBERT COWEN, of Cambridgeport, county of Middlesex, and State of Massachusetts, have invented an Improvement in Kneaders for India-Rubber, &c., of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide a self-feeding apparatus to be used in reducing or kneading substances.

My invention has for its more particular object to provide a continuously-operating kneader to be used in kneading or working up gutta-percha or india-rubber.

Prior to my invention gutta-percha or india-rubber has been fed between rollers, which crush or reduce the material placed between them, the said material falling from between the rollers upon the floor or into a suitable receptacle, from whence it is taken by a workman and again placed between the said rollers.

My present invention has for its object to provide a self-feeding apparatus, and thus make the process of kneading india-rubber or other material continuous, thereby dispensing with the constant services of a workman to feed the material into the apparatus.

My invention consists, essentially, of feed-rollers, between which the gutta-percha, india-rubber, or other material is passed, combined with an endless belt to receive the said material from the rollers and feed it again into the bite of the said rollers, as will be described.

My invention also consists of feed-rollers, between which the gutta-percha or like material is passed, and an endless belt to receive the said material from the rollers and feed it again into the bite of the said rollers, combined with a cleaner to remove particles of material adhering to the endless belt.

Figure 1 is a vertical transverse section of my improved self-feeding kneader, the section being taken on line x x, Fig. 2; and Fig. 2, a top or plan view of Fig. 1.

The sides A A′, united by cross braces or rods a, provided with usual nuts, a', constitute a supporting-frame for the apparatus. Each side A A′ is provided with a longitudinal slot, a^2, (see dotted lines, Fig. 1,) the said slot receiving within it boxes b b', which form journal-bearings for shafts b^3 b^5, respectively, the said shafts having mounted thereon rollers b^4 b^5. The shaft b^3 at one side of the apparatus has mounted upon it a belt-pulley, c, and a grooved pulley, c', and at the opposite side of the apparatus the said shaft has mounted on it a pinion, c^3, in mesh with a gear, c^4, on the shaft b^5, the rollers b^4 b^5 through said pinion and gear rotating in opposite directions.

Each side A A′, as herein shown, has secured to its top by screws c^5 a fender, c^4, having its sides shaped as shown in Fig. 1, to conform to the periphery of the rollers b^4 b^5, the said fenders and rollers forming a hopper, into which the gutta-percha or india-rubber is fed.

The gutta-percha or india-rubber is first fed into the hopper referred to by the workman, and is carried between the rollers. The india-rubber as it passes from the rollers falls upon an endless belt, d, passed over a roller, d^x, below and at the front end of the apparatus, the said roller being supported in bearings d^2, attached to the sides A A′, the said bearings being herein shown as bars provided with a series of notches, d^3, in one of which the journals of the said roller rest. The endless belt d is carried below the rollers b^4 b^5, one sheet or fold being passed around a stationary cross-bar or roller, d^6, secured to the sides A A′ at the rear of the apparatus, the other sheet or fold pressing against the roller b^5, the said endless belt being then passed over a roller, d^7, having its bearings in arms d^8, the said arms being pivoted or hinged, as at d^9, to the sides A A′.

In operation the rollers b^4 b^5 are rotated, as indicated by arrows 12, Fig. 1, by a belt in the pulley c, the said belt being driven by the rotation of a main or counter shaft, or in other well-known manner. The gutta-percha or india-rubber or other material, in a crude state, is placed by the workman in the hopper referred to, where it is bitten or seized by the rollers b^4 b^5 and carried between them, it falling upon the upper fold of the endless belt d as it passes from the rollers. As the gutta-percha falls from the rollers upon the endless belt d it is carried upon the said belt, between it and the roller b^5, to the top of the said roller, the belt moving in the direction indicated by arrow

20, Fig. 1. As the endless belt passes over the roller d' in the direction indicated by arrow 15 any particles of gutta-percha which might adhere thereto are removed therefrom by a cleaner e, shown as a brush revolving in the same direction as the roller d', as indicated by arrow 16, the gutta-percha brought up by the endless belt and the particles removed therefrom by the said cleaner being again fed into the bite of the rollers b^4 b^5, to be again passed between said rollers, the action of the said rollers upon the gutta-percha or other like material being continued until the said material has been kneaded into a soft and pliable mass. The shaft $e^\times$ of the cleaner which removes the particles of material adhering to the belt has its bearings, as shown, on top of the sides A A', and is secured in position by caps e^2, (see Fig. 2,) the said cleaner being rotated by a belt or rope, e^3, passed about a pulley, e^4, on its shaft $e^\times$, and about the grooved pulley c' on the shaft b^3, the said belt or rope being crossed to impart reverse rotation to the said shaft b^3 and cleaner-shaft $e^\times$.

The gutta-percha or other like material is fed continuously into the bite of the rollers b^4 b^5 until it has been sufficiently kneaded; but when it is desired to remove the said material the arms d^3 will be turned from their full-line into their dotted-line position, (shown in Fig. 1,) the endless belt d at such time hanging loosely below the rollers b^4 b^5, as shown by dotted lines.

The bearings d^2 for the roller $d^\times$, being notched, permit the said roller to be adjusted in its bearings to take up any slack in the endless belt which might arise after the said belt has been in operation for some time.

I claim—

1. In an apparatus for kneading gutta-percha, india-rubber, and like material, feed-rollers between which the material is passed, combined with an endless belt to receive the said material from the rollers, arranged across the space between the said rollers and extended under and partially about one of the said rollers, substantially as described, whereby the material delivered upon the said belt is by it again returned to the bite of the said rollers at their receiving side, to be again acted upon by the said rollers, as and for the purpose set forth.

2. In an apparatus for kneading gutta-percha, india-rubber, and like material, feed-rollers between which the material is passed, an endless belt to receive the said material from the rollers, arranged across the space between the said rollers and extended under and partially about one of the said rollers, substantially as described, whereby the material delivered upon the said belt is by it again returned to the bite of the said rollers at their receiving side, to be again acted upon by the said rollers, combined with a cleaner to remove particles of material from the endless belt, substantially as described.

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

ROBERT COWEN.

Witnesses:
G. W. GREGORY,
F. L. EMERY.