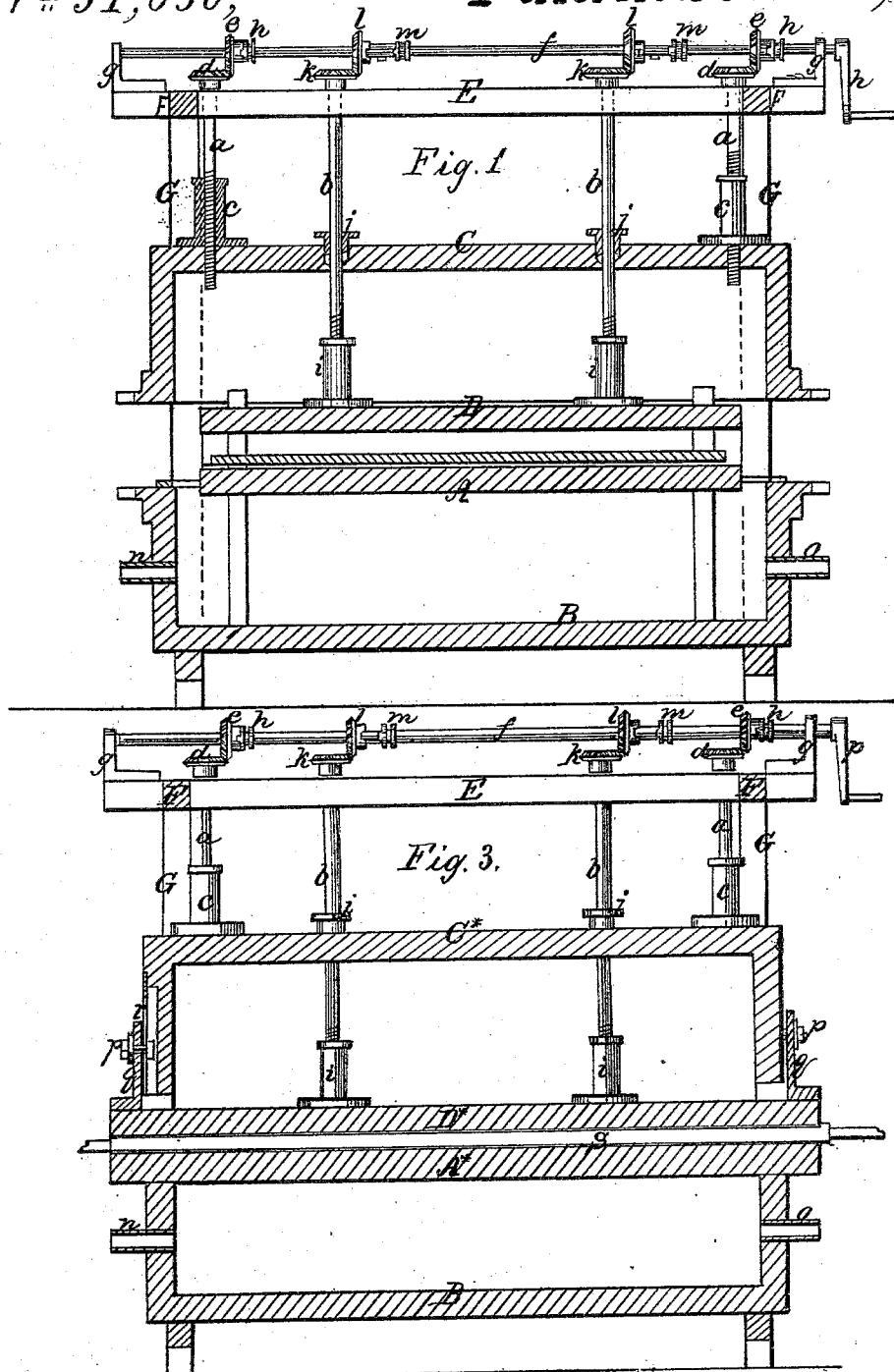


J. B. Forsyth, *Sheet 1. 2 Sheets*
Curing India Rubber,

No. 51,030,

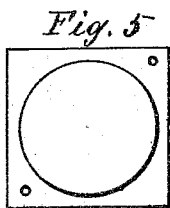
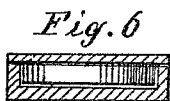
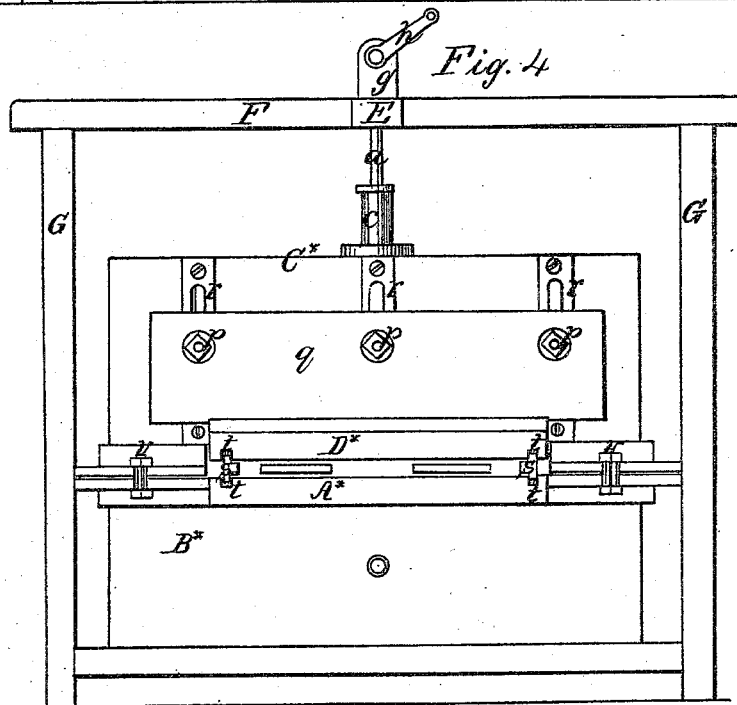
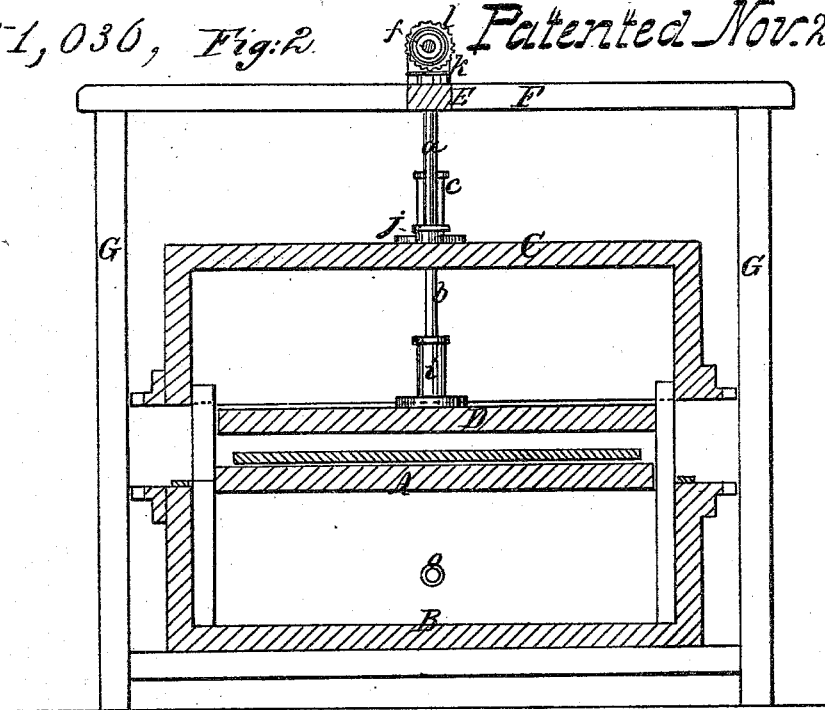
Patented Nov. 21, 1865.



Witnesses
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Theo. Lusch

Inventor
J. B. Forsyth
per Wm. B. Huntington

J.B. Forsyth, Sheet 2 - 2 Sheets
Curing India Rubber,
No. 51,036, Fig. 2. Patented Nov. 21 1865.



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UNITED STATES PATENT OFFICE.

JAMES B. FORSYTH, OF ROXBURY, MASSACHUSETTS.

IMPROVED APPARATUS FOR CURING INDIA-RUBBER.

Specification forming part of Letters Patent No. 51,036, dated November 21, 1865.

To all whom it may concern:

Be it known that I, J. B. FORSYTH, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented a new and useful Apparatus for Curing Goods of India-Rubber and Allied Gums; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention, showing its application to goods of limited extent, or to such articles which are cured in molds. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a longitudinal vertical section of the same, showing its application to belts or other goods of greater length than the apparatus itself. Fig. 4 is an end view of the same. Fig. 5 is a plan of a mold, and Fig. 6 a transverse vertical section of the same.

Similar letters of reference indicate like parts.

This invention relates to an apparatus composed of two plates or heaters, one of which is stationary and the other suspended from suitable screws, in combination with a jacket, the lower part of which is stationary, whereas the upper part is made to rise and fall, and which surrounds the pressing-plates partially or wholly in such a manner that by admitting steam or other suitable heating medium to the jacket the goods between the plates can be heated to any desired degree without coming in direct contact with the heating medium, and the operation of curing goods of india-rubber or allied gums can be effected with ease and facility. For goods the length of which exceeds that of the pressing-plates, said plates are provided with longitudinal grooves to receive suitable packing-strips, which prevent the heating medium from coming in direct contact with the goods to be cured, and at the same time, by means of said packing-strips, the thickness of the goods is determined.

A represents a plate, of cast-iron or any other suitable material, which is secured within the lower half, B, of a steam-jacket, the upper half or cap, C, of which is suspended from screw-

rods *a*. This cap covers the top plate, D, which is suspended from screw-rods *b*, as clearly shown in Fig. 1 of the drawings. The screw-rods *a* screw into thimbles *c*, which are rigidly attached to the upper surface of the cap C, and they pass up through a beam, E, which extends in a longitudinal direction over the whole apparatus, and is supported by cross-bars F, which rest on uprights G, rising on opposite sides of the jacket B C, and close to its ends. On the upper ends of said screw-rods are mounted bevel-wheels *d*, which gear in bevel-wheels *e*, mounted on a shaft, *f*, that has its bearings in brackets *g* secured on the beam E, near its ends, and to which a revolving motion can be imparted by a crank, *h*, or any other suitable means. The bevel-wheels *e* are so arranged on the shaft *f* that they can be readily thrown in or out of gear with the bevel-wheels *d*; or they are placed loosely on the shaft *f*, and sliding clutches *h* are applied, which are so arranged that when they are moved up to the wheels *e* said wheels are compelled to revolve with the shaft *f*; but if they are moved off from said wheels the shaft revolves in the same without any motion to the screw-rods *a*.

The screw-rods *b*, from which the top plate, D, is suspended, screw into thimbles *i*, which are firmly attached to the upper surface of said top plate, and they pass up through stuffing-boxes *j* in the cap C, and through the beam E, as clearly shown in Fig. 1 of the drawings. On their upper ends are mounted bevel-wheels, *k*, which gear in corresponding bevel-wheels *l*, on the shaft *f*, and said bevel-wheels *l* are placed loosely on the shaft, being coupled to the same by sliding clutches *m*, which can be thrown in and out of gear at pleasure.

A suitable pipe, *n*, leading to the interior of the trough B, serves to introduce steam or other suitable heating medium, and another pipe, *o*, emanating from said trough, serves to carry off the condensed water or the surplus steam.

When the apparatus is to be used for curing goods the length of which exceeds that of the jacket B C it is constructed as shown in Figs. 3 and 4. In this case the plate A* is fastened to the top edge of the trough B*, and its ends extend beyond the edges thereof, as

clearly shown in Fig. 3, but the width of the trough exceeds that of the plate, so that the steam or other heating medium admitted to said trough is free to pass round that portion of the plate which is situated over the open space of the trough. The top plate, D*, is equal in length to the bottom plate, A*, and it is connected to the cap C* by means of screw-bolts *p*, which are secured in brackets *q*, fastened to the plate D*, and the heads of which slide up and down in slotted plates *r*, attached to the ends of the cap C*, as shown in Fig. 4. By this arrangement an independent rising-and-falling motion can be imparted to the top plate, D*, and to the cap C*, and at the same time, by the application of the brackets *q*, the escape of steam from the interior of the cap is avoided as much as possible.

The mechanism used for raising and lowering the top plate and the cap is precisely the same as that applied to the apparatus first described, and represented in Figs. 1 and 2; but, in order to prevent the steam or other heating medium from passing in between the two plates A* and D*, and from coming in direct contact with the article or articles placed between said plates, it is necessary to provide packing-strips *s*, which are fitted into grooves *t* near the edges of the plates A* D*, and extending throughout their whole length. Small strips of india-rubber are placed in the grooves *t*, so that when the strips are placed into the grooves, and the plates are compressed, a tight joint is formed on the edges thereof. The packing-strips *s* also serve to determine the thickness of the goods to be pressed between the plates A* D*, and for goods of different thickness packing-strips of different width have to be provided.

The apparatus represented in Figs. 1 and 2 is intended for curing such articles which are equal in length to the plates A D, or shorter than the same, or for such articles which are cured in molds F, such as shown in Figs. 5 and 6. These articles or molds are introduced by raising first the cap C and then the top plate, D, and after they (the molds or articles) are properly adjusted on the bottom plate, A, the top plate, C, is lowered until it bears down tight upon the tops of the articles or molds, and then the cap C is lowered and steam or other suitable heating medium is admitted to the jacket. The joint between the cap C and trough B may be rendered tight by interposing a suitable packing-piece, *u*, and by the application of screw-bolts *v*, which are inserted into slots in the flanges of the cap and trough, as shown in Fig. 4 of the drawings.

By the action of the steam or other heating

medium the plates A and D are heated to any desired degree, and the curing operation is effected without permitting the heating medium to come in direct contact with the goods.

The apparatus represented in Figs. 3 and 4 is intended particularly for curing belts of india-rubber or allied gums or other articles the length of which exceeds that of the plates A* D*. In this case the articles are cured in sections, one part first and then the next, and said articles are introduced between the plates A* D* by raising first the cap C* and then the plate D*. After the goods have been properly adjusted on the plate A* the packing-strips are inserted in their grooves and the plate D* and cap C* are brought down, and the steam or other heating medium is admitted to the jacket B* C*. By the action of the heating medium the plates A* D* are heated and the goods are cured without being permitted to come in direct contact with the steam or other heating medium. After the first section of the goods is cured, the cap C* and plate D* are raised, the goods are drawn through between the plates, and the succeeding sections are arranged between the plates, and the operation is continued, as previously described.

The operation of curing goods of india-rubber or allied gums can thus be conducted with the greatest ease and facility, and without danger of injuring said goods to which they are exposed if they are brought in direct contact with the steam or other heating medium; and it is obvious that the shape and size of the plates can be adapted to the shape and size of the goods to be cured.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The employment or use, for curing goods of india-rubber or allied gums, of an apparatus composed, essentially, of two plates which can be compressed by screw-rods or other suitable means, and which are partially or wholly inclosed in a suitable jacket, to be heated by steam or other suitable heating medium, substantially as herein set forth.

2. The raising, lowering, or opening of said jacket by means of screw-rods or other suitable means, constructed and operating substantially as and for the purpose described.

3. The packing-strips *s*, in combination with the plates A* D* and jacket B* C*, constructed and operating substantially as and for the purpose set forth.

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Witnesses:

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A. F. BADGER.