

(No Model.)

2 Sheets—Sheet 1.

P. LE GRAND.
MACHINE FOR MAKING FELT.

No. 470,496.

Patented Mar. 8, 1892.

Fig. 1.

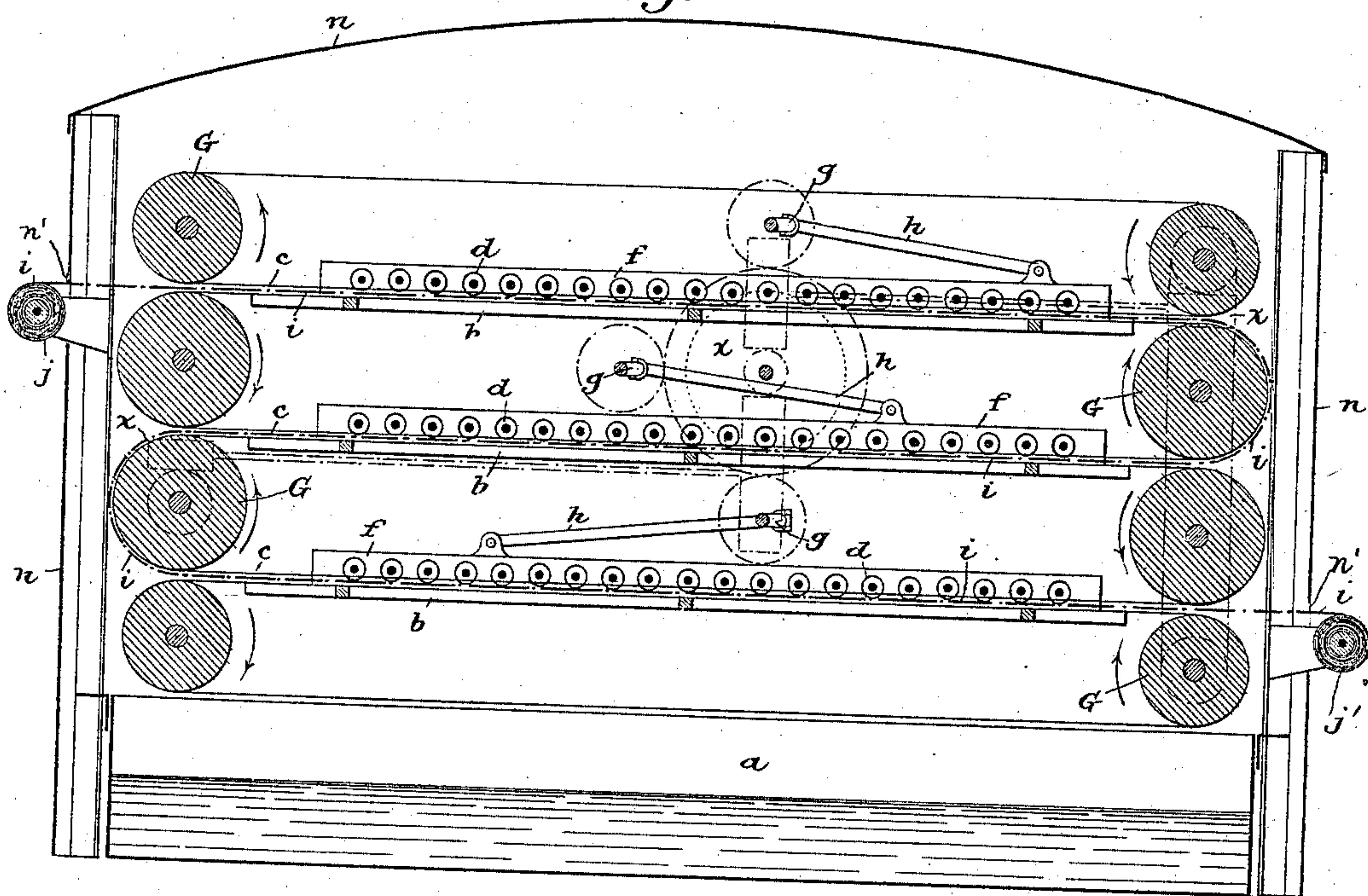
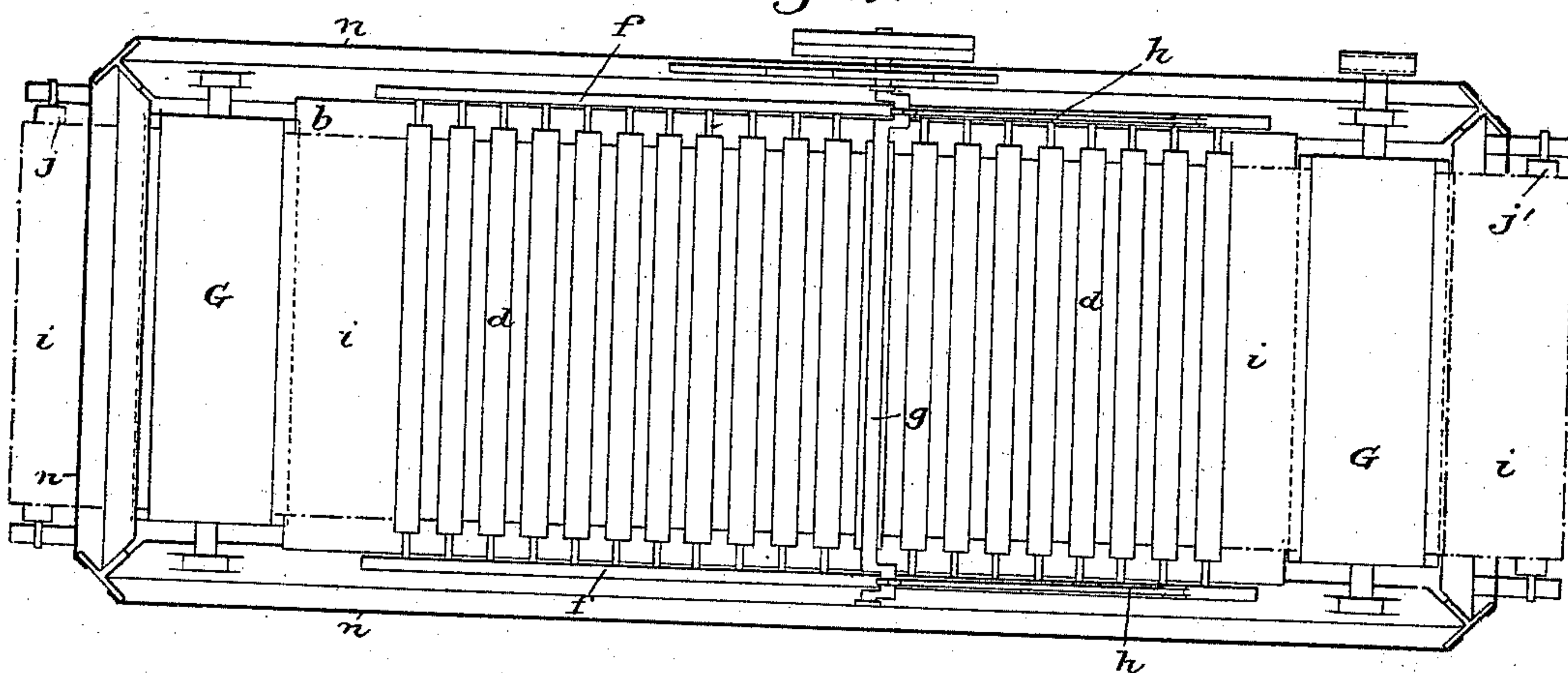


Fig. 2.



Witnesses:

E. B. Bolton
W. A. C. Walsh.

BY

Inventor:
Pierre LeGrand

Richardson

his Attorneys.

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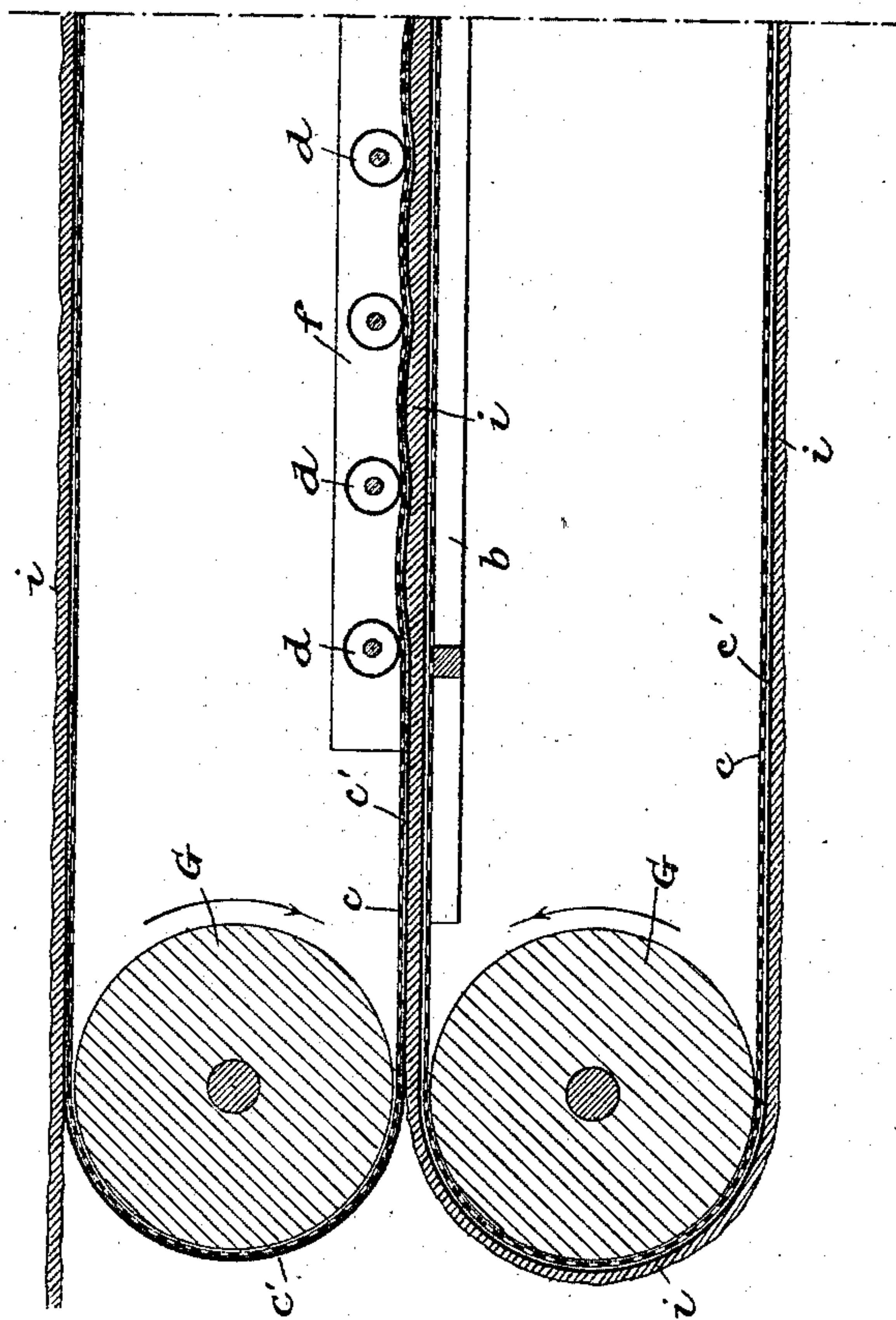
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Fig. 3.



Inventor:

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Witnesses:

E. B. Bolton

M. A. C. Walsh

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Richard D. [Signature]

his Attorneys

UNITED STATES PATENT OFFICE.

PIERRE LE GRAND, OF PARIS, FRANCE.

MACHINE FOR MAKING FELT.

SPECIFICATION forming part of Letters Patent No. 470,496, dated March 8, 1892.

Application filed September 2, 1891. Serial No. 404,487. (No model.)

To all whom it may concern:

Be it known that I, PIERRE LE GRAND, a citizen of the French Republic, and a resident of Paris, in said Republic, have invented certain
5 new and useful Improvements in Machines for Making Felt, of which the following is a full, clear, and exact description.

Stiff unwoven felts are obtained by effecting a first operation called "felting," which
10 consists in mixing the wool threads or other felt hairs one with the other to form a sheet. When this sheet is sufficiently dense to support the treatment of the fuller without altering, the operation of fulling is proceeded with,
15 which has the purpose of rendering the primitive sheet more or less compact and solid, according to the quality desired.

The machine which is the subject of the present specification does away with all the
20 abuses of these operations, working more rapidly and better than could be done by hand.

In the accompanying drawings, Figure 1 is a view of the machine in longitudinal vertical section. Fig. 2 is a plan view of the same machine. Fig. 3 is a detail view of the machine.
25

The same letters of reference represent the same parts in the several figures.

In this machine the felting is done by damp beating of the wool threads and felt hairs
30 jointly with a heating up and continuous friction, and for this purpose the machine has at its lower part a water-reservoir, which is constantly kept at a high temperature to obtain steam or a hot bath. Above this reservoir are arranged a certain number of superposed rollers G, receiving a rotary movement from any transmission system, and on which pass with a suitable tension endless carrying-cloths made of wire-netting *c*, covered with a linen cloth *c'*, as shown in Fig. 5
40 of the drawings. On each metal cloth is arranged a series of cylinders or rollers *d*, mounted on carriages *f*, receiving a forward and

backward movement by means of the elbow-shafts *g* and the rods *h h*. This arrangement
45 is repeated any number of times by putting the rollers G in tiers, as shown by the drawings. The felt rolled on the roller *j* is drawn between the endless cloths *c c'*, where it is subjected to the action of the working cylinders
50 *d* and comes out at the lower part of the machine, where it is rolled up in *j'* or in any other suitable place. To resist the pressure of the working cylinders, the endless cloths are held up, where it is necessary, by grates *b*,
55 arranged for this purpose. The working cylinders *d* by their alternate forward and backward movement rub and heap up the tissue, doing thus the felting. They are each composed of an iron tube *k*, mounted in any manner on an axle *l*.
60

To avoid all loss of heat and steam, I envelop the machine entirely or in part, according to necessity, with a sheet-iron coat *n*, in which apertures *n'* are made for the passage
65 of the felt. The different parts are actuated in any suitable manner, according to the arrangement of the machine and the necessities of the work.

I claim—

The combination, with the lower receptacle, of a series of rollers above said receptacle, endless cloth-covered wire, carrying-cloths passing over the same, a series of rollers mounted on carriages and arranged on each
75 carrying-cloth, shafts *g*, and rods *h* for reciprocating said carriages and grates beneath said cloths for supporting the same, substantially as shown and described.

In witness whereof I have hereunto set my
80 hand in the presence of two witnesses.

PIERRE LE GRAND.

Witnesses:

H. AYOLLEY,
C. P. ANEMAET.