

(No Model.)

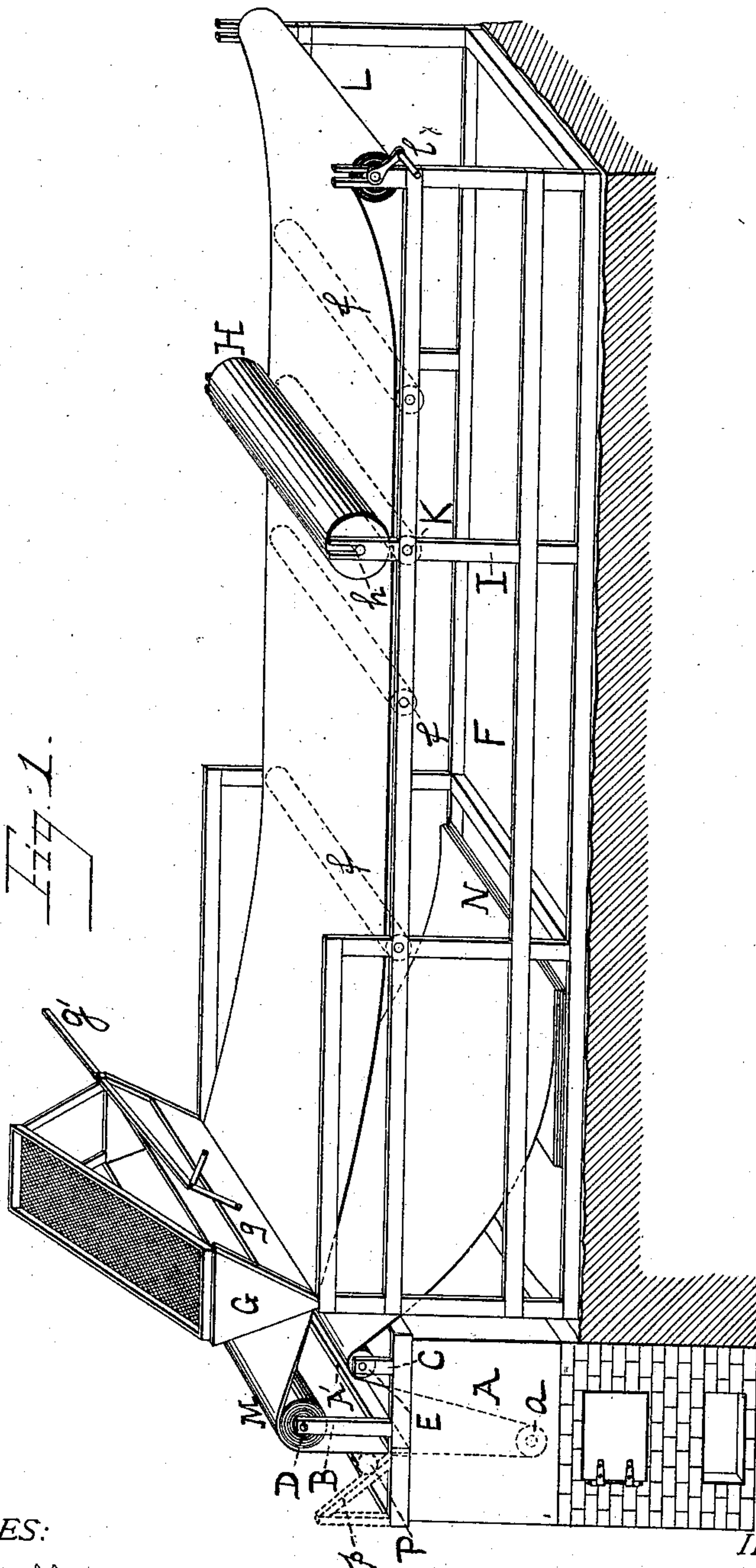
2 Sheets—Sheet 1.

H. M. MINER.

PROCESS OF AND APPARATUS FOR MANUFACTURING ROOFING MATERIAL.

No. 373,085.

Patented Nov. 15, 1887.



WITNESSES:
Willie Powell.
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INVENTOR
Henry M. Miner
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

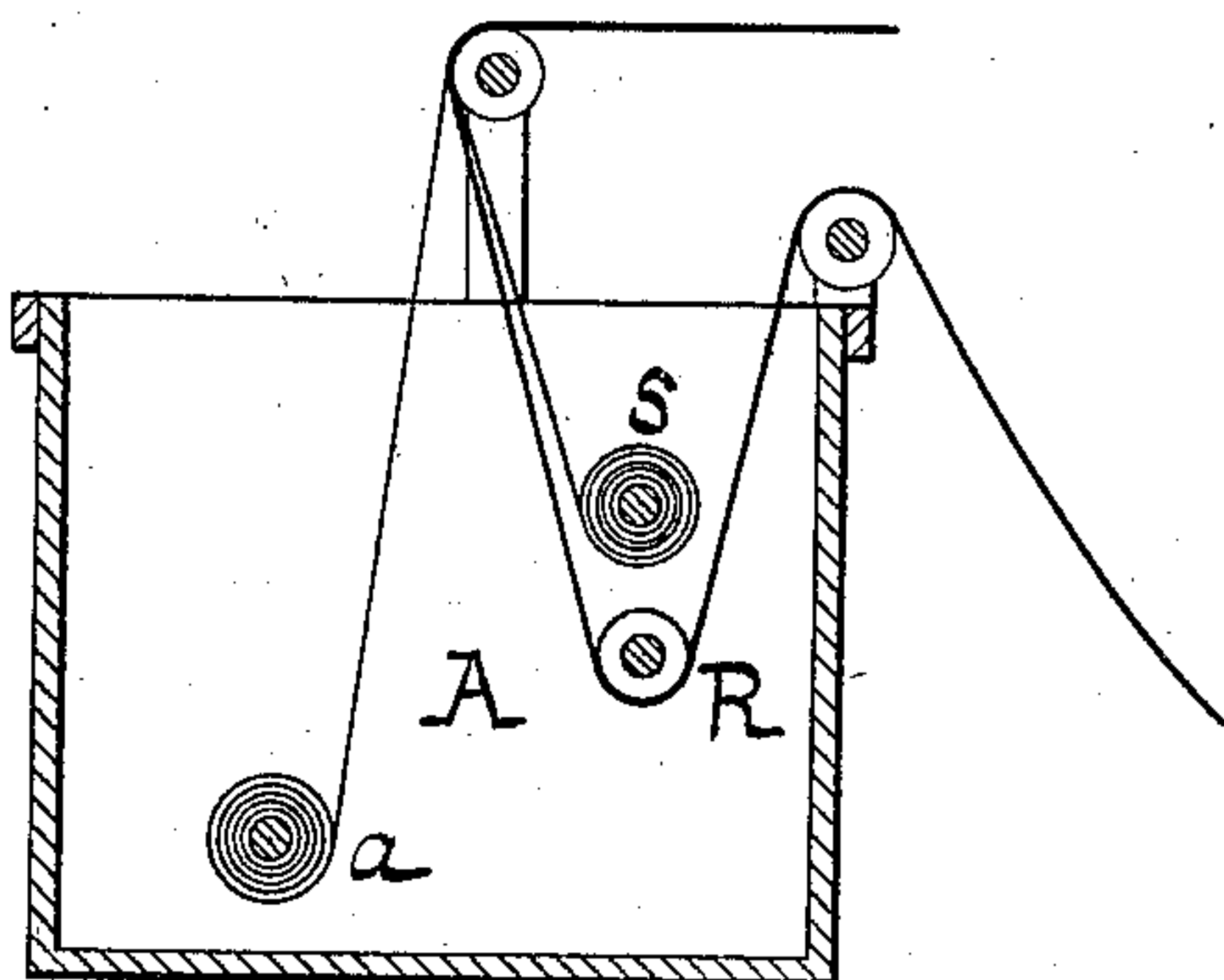
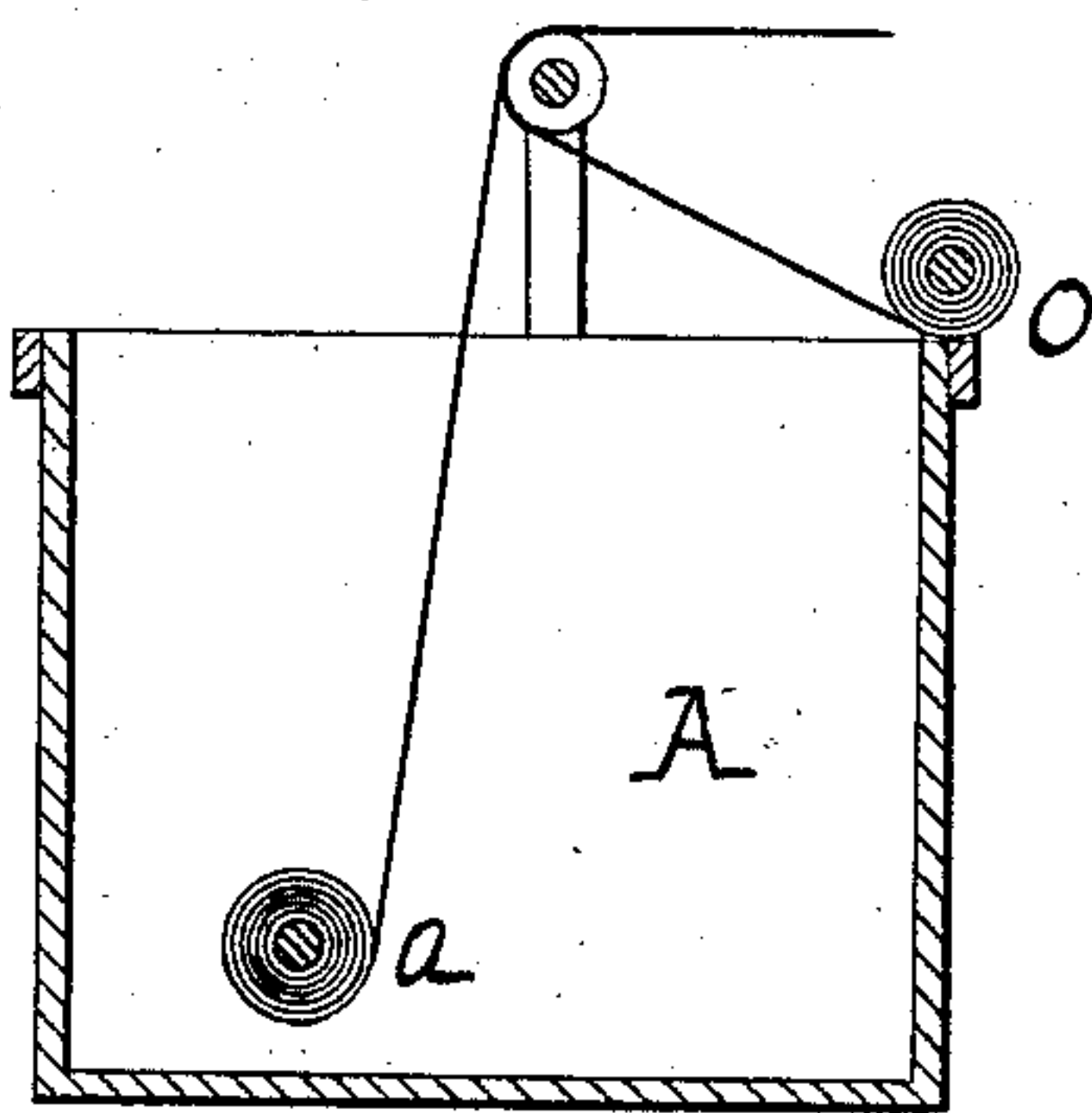


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY M. MINER, OF PHILADELPHIA, ASSIGNOR TO THE GRANITE ROOFING COMPANY, OF PITTSBURG, PENNSYLVANIA.

PROCESS OF AND APPARATUS FOR MANUFACTURING ROOFING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 373,085, dated November 15, 1887.

Application filed April 17, 1885. Serial No. 162,528. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. MINER, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have
5 invented a new and useful Improvement in Process of and Apparatus for Manufacturing Roofing Material; and I do hereby declare the following to be a full, clear, and exact description thereof.

10 In the accompanying drawings, Figure 1 is a side elevation of my improved apparatus. Figs. 2 and 3 are vertical sectional views of modified forms of parts thereof.

My invention has relation to machines and
15 processes for applying pitch or other adhesive material to felt, burlap, and other roofing fabrics, for surfacing the same with sand or gravel, and for uniting two or more sheets of fabric together and embedding the sand or
20 gravel in the pitchy surface by compression.

My improvements consist in the process for effecting the objects above stated and in the peculiar construction and combination of parts constituting the apparatus whereby the said
25 process is carried into effect.

Said process consists, essentially, of the following steps: immersing one sheet of the fabric in molten pitch or equivalent material; uniting said sheet, after its emergence from
30 the pitch-kettle, to another sheet of fabric; passing the united sheets under a hopper from which sand or gravel is flowing, whereby the upper surface of the pitched sheet is sanded or graveled, and afterward subjecting the
35 united and sanded or graveled sheets to compression, said process being a continuous one—*i. e.*, one in which the compression of a part of the sheets is effected while other parts of the same are being immersed and sanded or
40 graveled.

The apparatus whereby the said process is carried into effect comprises the following parts: a kettle or vessel for melting pitch or immersing fabric therein; a stationary hop-
45 per for holding sand or gravel, having a gate for controlling the flow therefrom; a long table or platform for supporting the sheets of fabric, and a compression-roller. Said apparatus further comprises supports for shafts or
50 spindles for unrolling the fabric and guiding

the same, and also a shaft for winding up the roofing material after treatment. It also comprises a scraper for removing superfluous pitch from the under side of burlap, when that material is used, and a stripping-roller for removing excess of pitch from the upper side of
55 felt when the same is the material dipped in the pitch-kettle.

I will premise further description by remarking that my invention is applicable to
60 making three kinds of roofing, viz: first, roofing comprising one thickness of felt or roofing-paper and one of burlap; second, roofing comprising two thicknesses of felt or roofing-paper; third, roofing comprising two thick-
65 nesses of felt and an intermediate sheet of burlap.

Referring to the accompanying drawings, A designates a vessel or kettle designed and adapted to hold pitch, and which should be
70 provided with any suitable means for applying heat to melt its contents. Said vessel is open at the top and has located near its bottom a roller or shaft, *a*, around which the fabric to be dipped in the kettle (when the
75 roofing is composed of a sheet of burlap and one of felt) passes. Said shaft forms the spindle for a roll of felt when the roofing comprises two thicknesses of felt, as hereinafter explained. It is sustained in a gate or frame,
80 which can be moved vertically to lower it into and remove it from or raise it out of the kettle. Upon the upper edge of the kettle or on the brick or frame work surrounding it are placed standards B C, which afford supports for a
85 spindle, D, and roller E, respectively.

F represents a long table or frame, the upper surface of which constitutes a platform or floor having at short intervals anti-friction
90 rollers *ff*, transversely disposed, immovable from their positions, but free to rotate on their axes. Over the upper end of the table, or that end adjacent to the kettle A, is a stationary hopper, G, having a gate, *g*, with actuating-lever *g'*, whereby the discharge of sand
95 or gravel therefrom is regulated and controlled.

About midway between the upper and lower ends of the table F is a heavy compression-roller, H, whose trunnions or journals *h h* are
100

fitted in vertically-slotted standards I I. Below the roller H is another roller, K, fixed in position, but capable of rotation on its axis. The upper surface of this roller is in or about the same plane with the upper surfaces of the rollers *f f*. At the lower end of the table F is a winding-shaft, L, with handle *l* or equivalent means of turning it.

I will now describe how the apparatus is worked in making roofing-fabric comprising one thickness of felt or roofing-paper and one of burlap.

A spindle or shaft, D, is passed through the axial cavity of a roll of felt, M, and placed in the standards B B. A bale of burlap is then spread out or opened beneath the upper end of the table, as shown at N. One end of the sheet of burlap is then carried over the roller E, then down under the roller *a* and up over the roll of felt M, where the ends of the two sheets (burlap and felt) are united by means of the pitch with which the former becomes coated in its passage through the kettle.

I would here remark that the kettle is provided with a transverse bar, A', which serves to remove surplus pitch from the under side of the burlap as the latter gradually emerges from the kettle. The two united sheets are drawn together beneath the discharge of the hopper G, from which sand or gravel is allowed to flow in a duly-regulated stream over the upper surface of the top sheet, which became and remained coated with pitch by passing through the kettle, as already described. It will be noted that the sand or gravel is applied to the surface of the fabric directly after the latter comes out of the kettle, and therefore while the pitch is still hot and soft, and also that the hopper remains stationary while the fabric travels under it. The two sheets thus united and sanded or graveled are drawn on continuously and passed beneath the compression-roller H, whereby they are pressed more firmly together, by which means, also, the sand or gravel is embedded in the pitched surface of the burlap. The united and sanded or graveled sheets (after compression, and now forming one sheet of roofing material of double thickness) are next drawn farther onward, their conjoint end attached or wound on the shaft L, and are thereon rolled up into rolls of suitable length. When a sufficient quantity of material has been wound up on the shaft to form a roll it is cut off close to said shaft and removed therefrom. The severed end remaining on the table F is then attached to the shaft L and a fresh roll commenced.

Where roofing comprising two thicknesses of felt or paper is to be made the scraper A' may be dispensed with. A roll of felt is mounted on the shaft *a* and allowed to descend into the kettle A, where it becomes immersed in the molten pitch. One end of the roll of felt is carried up and united to the end of another sheet of the same material unwound

from a roll, O. The united sheets then pass onward beneath the hopper G and compressing-roll H and are wound upon the shaft in the manner already described. This is illustrated in Fig. 3. With this and the next-mentioned class of roofing material, in which the felt is passed through or unwound from a roll in the pitch-melting kettle, a stripping-roll, P, may be employed. This consists of a metallic roller resting upon inclined ways *p p*, as shown in Fig. 1, so that it will bear against the back surface of the sheet or felt, or that side of the felt which is up in passing beneath the hopper. This stripping-roll serves to remove any excess of pitch from the adjacent surface of the felt, rendering the coating of uniform and proper depth.

To make roofing material composed of two thicknesses of felt or paper and an interposed sheet of burlap, the arrangement and operation are the same as that just described for two thicknesses of felt, except that the burlap is introduced between the sheets of felt in the manner shown in Fig. 2, passing around a roller, R, beneath the roll S and in front of the ascending part of the other roll of felt, *a*.

What I claim as my invention is as follows:

1. The method or process of manufacturing sanded or graveled roofing material comprising two or more thicknesses, said method or process consisting of the following steps: drawing one sheet of the material through or from a vessel of molten pitch or equivalent material, uniting said sheet after emergence from the pitch-kettle to another sheet, passing the united sheets beneath a hopper from which sand or gravel is discharged on the upper surface of the top sheet as the material is traveling, and then subjecting the united and sanded or graveled sheets to compression, the drawing of the sheets, the sanding or graveleding, and compressing being effected simultaneously after starting, substantially as set forth.

2. In a machine for making roofing material, the combination of the following parts: a pitch kettle or vessel adapted and designed to permit the passage or draft from it of a sheet of roofing fabric, rollers E, *a*, and D, some or all of which are adapted to carry coils of fabric, a sand or gravel hopper, a supporting-table, and a compressing-roller, said hopper being situated between said kettle and compressing-roller, and said several parts being constructed and arranged to permit and promote the process hereinbefore described for making roofing material of two or more sheets of fabric, substantially as and for the purposes described.

3. In a machine for making roofing material of two or more sheets of fabric, the combination, with the dipping or immersing vessel A, of one or more rollers or shafts journaled within said vessel and beneath the surface of the molten liquid therein, and rolls of

fabric carried by said rollers or shafts, substantially as and for the purposes described.

4. In a machine or apparatus for manufacturing roofing material, the table F, having
5 anti-friction supporting-rollers f, compression-roller H, and winding-shaft L, substantially as shown, and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 13th day of March, A. D. 1885.

HENRY M. MINER.

Witnesses:

W. B. CORWIN,
J. K. SMITH.