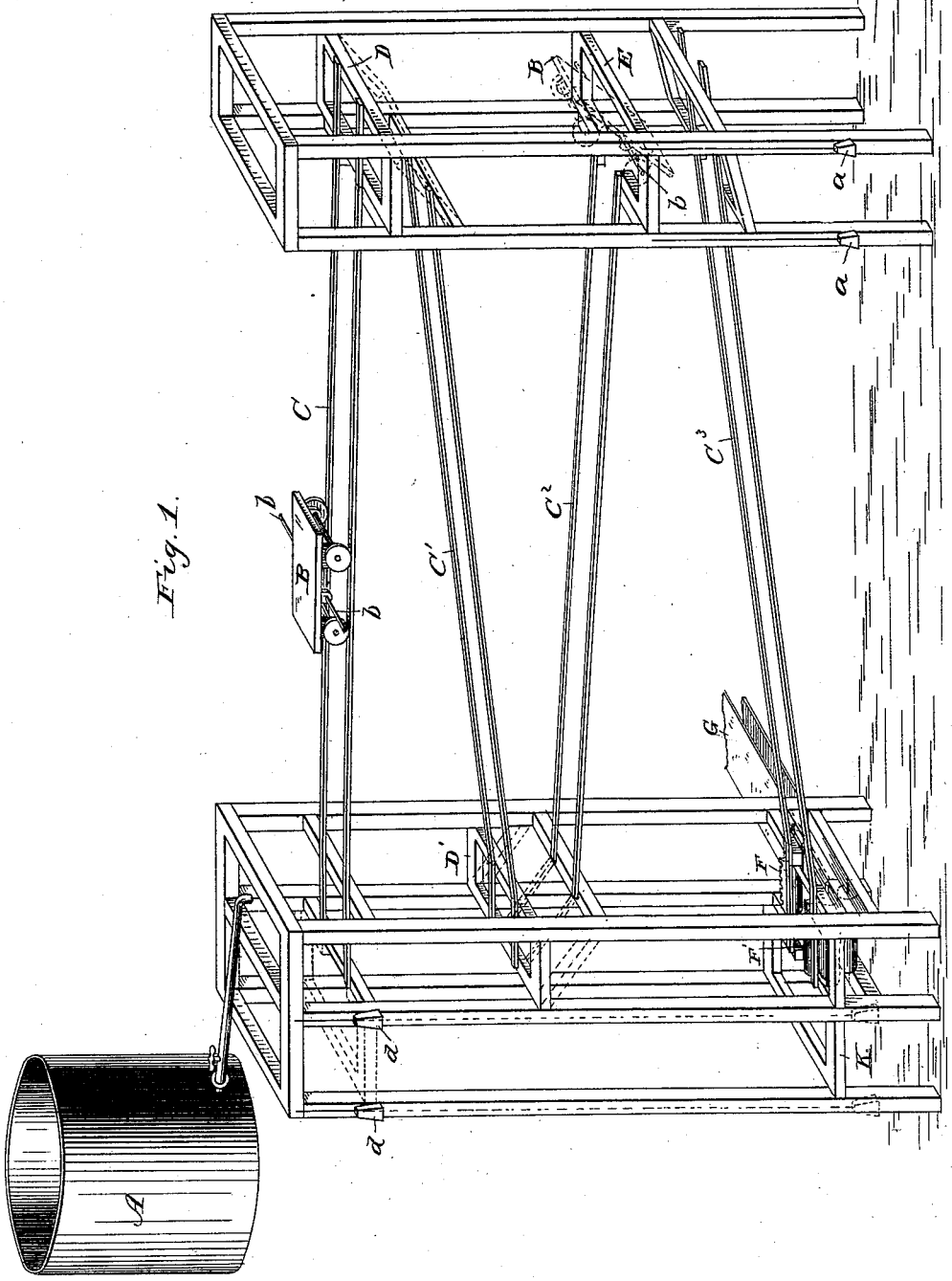
(No Model.) 3 Sheets—Sheet 1.

W. P. UPHAM.

MANUFACTURE OF GLUE.

No. 343,507. Patented June 8, 1886.



Witnesses:
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Marvin A. Custis.

Inventor:
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by Marcellus Bailey
his attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

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MANUFACTURE OF GLUE.

No. 343,507. Patented June 8, 1886.

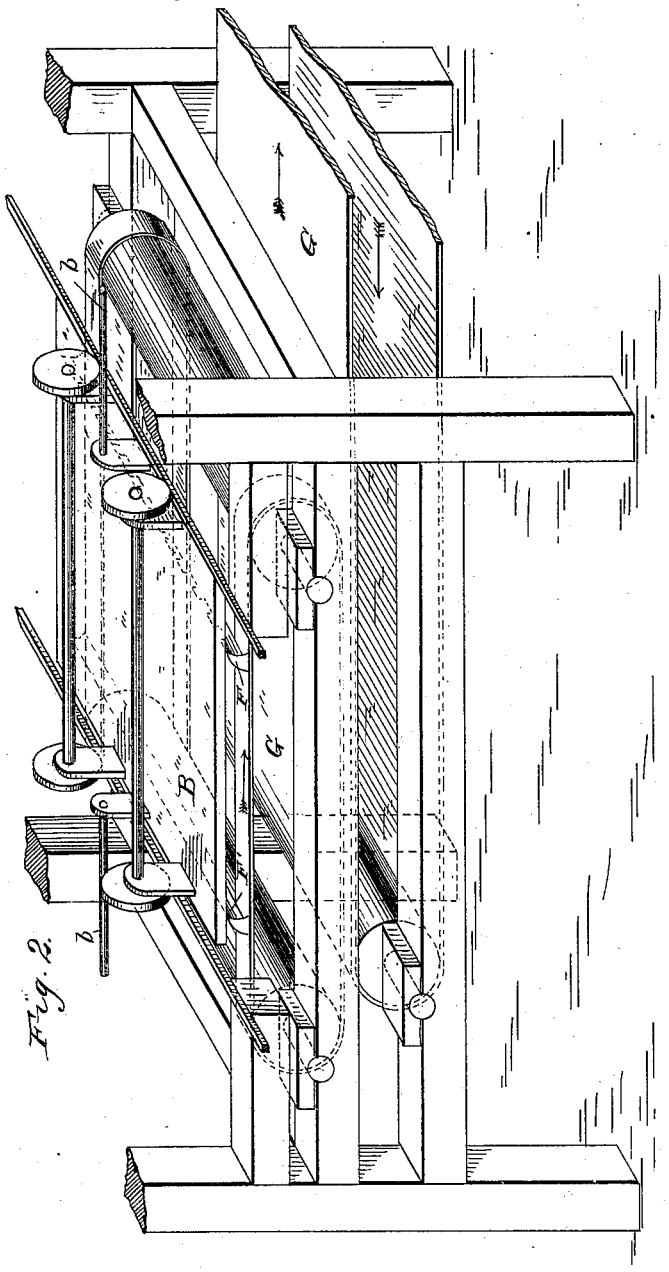

Fig. 2.

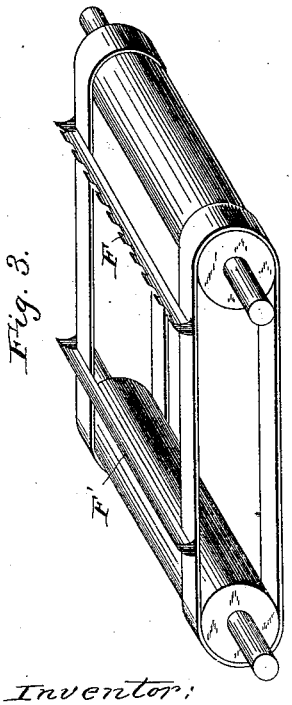

Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

W. P. UPHAM.

MANUFACTURE OF GLUE.

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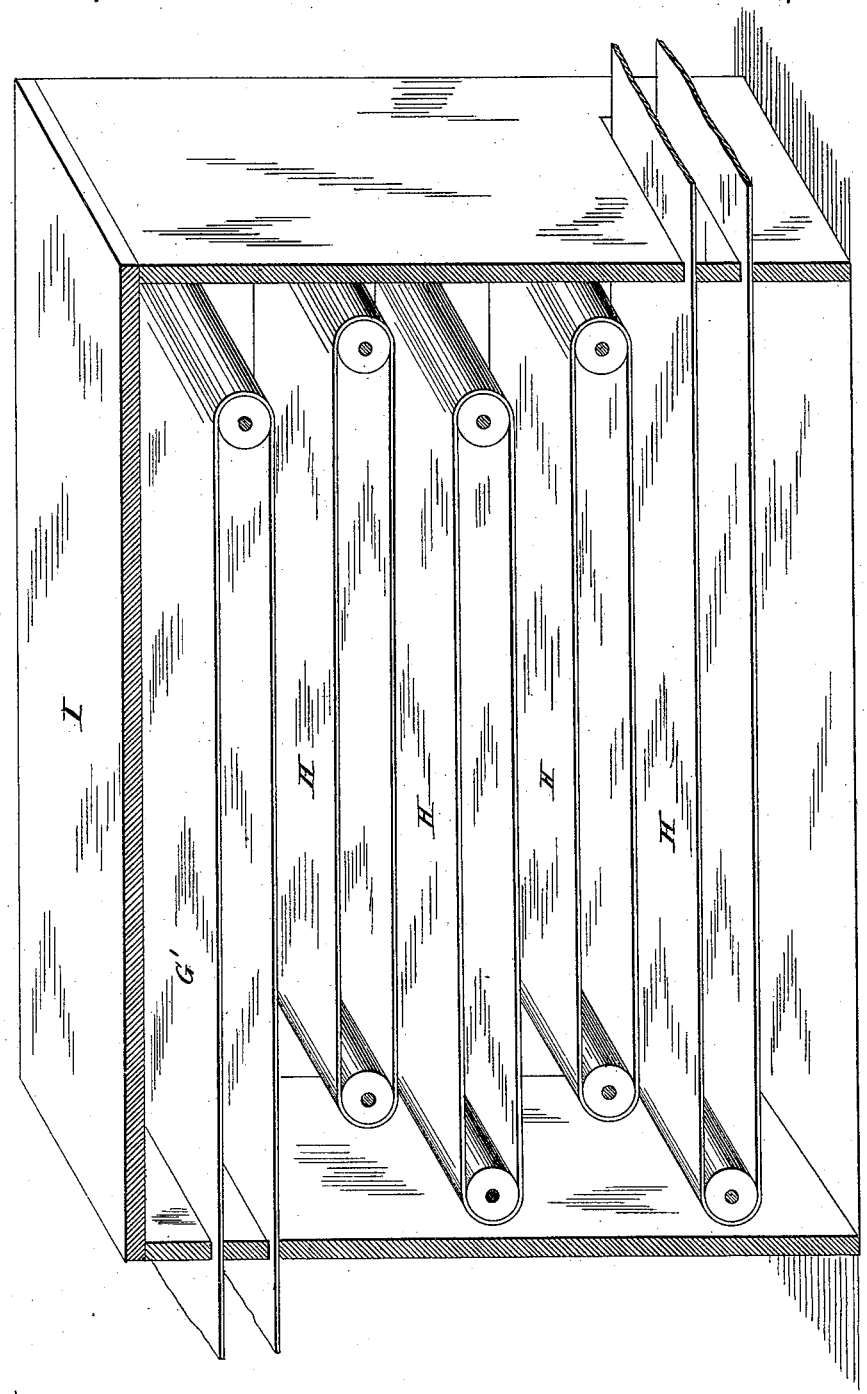

Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM P. UPHAM, OF PEABODY, ASSIGNOR TO N. MAYO DYER, OF MELROSE, MASSACHUSETTS.

MANUFACTURE OF GLUE.

SPECIFICATION forming part of Letters Patent No. 343,507, dated June 8, 1886.

Application filed March 31, 1886. Serial No. 197,239. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. UPHAM, of Peabody, in the State of Massachusetts, have invented certain new and useful Improvements in the Manufacture of Glue, of which the following is a specification.

The improvements that I have devised in the manufacture of glue are intended mainly to do away, as far as possible, with the handling of the glue during the process of its manufacture, and to shorten the time required for its manufacture.

Under my invention the glue is deposited in liquid form in a thin sheet or layer, which, after having cooled enough to "jell," is divided into sections or strips which are delivered onto endless belting, which convey it to a drying-room containing a series of endless belts or aprons, from one to the other of which the strips are delivered, the strips thus being kept in motion during the drying operation and exposed to an atmosphere of air dried, or dried and heated to the temperature best suited to effect the drying of the glue.

To obtain the glue in the sheet form I prefer to deposit it upon slabs or tables which are movable, and can, after the glue has become sufficiently "set," be conveyed to and acted upon by two or more wires, knives, or scrapers, which preferably are arranged so as to remove the glue in strip form. In practice I prefer to use two scrapers—one having a notched edge, so as to remove alternate sections, strips, or ribbons of glue, and the following one serving to remove the strips left by the first or notched one. In order to effect this removal the scrapers may be stationary and the tables or slabs moved over them, or the tables or slabs may remain still and the scrapers be arranged to move under them.

In the accompanying drawings I have represented, to a large extent diagrammatically, an apparatus adapted to effectuate my invention.

Figure 1 is a general view of that portion of the apparatus in which the glue is brought into sheet form, cooled, and divided into strips. Fig. 2 is a perspective view, on an enlarged scale, of that portion of the apparatus by which the glue is divided into strips. Fig. 3 is a perspective view of the scrapers and skeleton belt which carries them. Fig. 4 is a view of that portion of the apparatus in which the strips are dried.

In that portion of the apparatus illustrated in Fig. 1 the slabs or tables form part of carriages or trucks which run on inclined ways or tracks from the tank to the scraping or stripping apparatus.

A is the tank from which the liquid glue is supplied.

B are the trucks or carriages constituting the movable slabs onto which the glue from the tank is run in the form of a thin layer or sheet.

C C′ C^2 C^3 are inclined track-sections on which the carriages B move. The carriage, after leaving the tank, travels down the topmost track-section until it reaches the swinging or pivoted trap D, which may be upheld by a spring or weight that will permit the trap to descend, as indicated by the dotted lines, when the weight of the carriage is superadded; or the trap may be raised and lowered by hand, or may be otherwise arranged to drop or swing down when required, in order to shift the carriage to the inclined track-section C′ next below.

At the lower end of the track-section C′ is a trap, D′, similar to D, by which the carriage is shifted to track C^2. It passes down this incline to the trap E, which is not hinged, but moves vertically up and down, being upheld by the weights *a*. This trap has no rails on it. It is a mere skeleton frame in which the carriage is held by laterally-projecting rods or pins *b*, which are long enough to rest on the sides of the frame E. The front end of the carriage is weighted, or made heavier than the rear end, and thus, when the carriage is suspended in the frame E on pins *b*, the latter virtually constitute pivots on which the carriage will turn, so as to bring its weighted front end downward, as indicated by dotted lines in Fig. 1. The trap E, with the carriage in this position, descends until the front wheels of the carriage meet the rails of the track C^3 below, and the carriage thus turned upside down will move off down the incline C^3. The object of thus turning the carriage is to bring

the glue side of the slab underneath in position to be operated on by the scrapers or devices for removing the glue.

The length of track, rate of travel of the carriages, and temperature of the room in which the track is located should be so regulated that the glue will have set by the time the carriage reaches the scrapers. Thus by the time the carriage reaches the end of the lowermost incline the glue on it will be ready for removal. This operation in the present instance is performed by scrapers F F′. The scrapers are, as seen in Fig. 3, carried by a skeleton endless belt, which, like all the other belts or aprons hereinafter referred to, is power-driven. They are arranged to move transversely of the carriage. The front one, F, has a toothed or notched edge, so as to remove alternate sections or strips of the glue, while the second one, F′, removes the strips left by the first. By this operation the glue is divided into strips, with the result of materially facilitating the drying operation, and also of getting the material into a shape in which it can subsequently be easily handled. The two sets of strips drop through the skeleton belt of the scrapers upon one or more receiving-aprons, G, and thence upon the apron G′, Fig. 4, which conveys them to the drying-room I, in which a drying atmosphere is maintained, and where they pass from one to the other of the moving aprons or endless screens H. These aprons or screens are of fine wire or other reticulated material, so that the glue may be exposed on both faces to the drying atmosphere. By dividing up the glue into strips the exposed surface is much increased by the fact that the edge surface exposed is very much greater than if the glue were in a solid-sheet form, and consequently the material is dried more perfectly, thoroughly, and rapidly. The aprons H run alternately in opposite directions, and each apron extends beyond the apron above it far enough to receive the glue or gelatine as it falls from the latter. The lowermost apron H passes out from the drying-chamber and carries off the glue or gelatine to any suitable point where it is to be delivered. The scrapers might be stationary and the slab or table might be movable. In this event two aprons, G, might be used, one to receive the strips from the front scraper and the other to receive the strips from the rear scraper, and both sets of strips could thence be assembled upon a single conveying-apron, G′. After the removal of the glue from the carriage it is run upon an elevator-frame, K, controlled by weights *d*. This frame is a skeleton frame like frame E, and permits the weighted end of the carriage to hang down, the carriage thus being in a position, when the elevator has carried it up to the topmost track-section, to be readily replaced upon that track in its original position to begin its journey anew after having received a fresh supply of glue.

I have not deemed it necessary to give more than a general description of this portion of the apparatus. Any arrangement which admits of the use of movable slabs or tables can be employed, and I do not desire to be understood as directing my claims to the specific apparatus herein illustrated, which is but one of the many that are available for the purpose.

Having now described my improvements and the manner in which the same are or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination of movable tables or slabs upon which the glue is deposited in sheet form, scrapers, cutters, or wires for removing the glue therefrom in sections or strips, and a receiving apron or aprons upon which said strips are deposited, substantially as and for the purposes hereinbefore set forth.

2. The described improvement in the manufacture of glue, consisting in cooling the same on movable tables or slabs in a layer or thin body, dividing it into strips or sections, and drying the same in a drying atmosphere upon moving aprons, from one to the other of which the strips or sections are successively delivered, substantially as and for the purposes hereinbefore set forth.

3. The combination of the cutters or scrapers arranged and adapted to act successively upon the glue or gelatine sheet, as described, with a receiving apron or aprons, substantially as and for the purposes set forth.

4. The improvement in the art of drying glue or gelatine, consisting in exposing it to the action of a drying atmosphere upon moving aprons, from one to the other of which the glue is successively delivered, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand this 22nd day of February, 1886.

WILLIAM P. UPHAM.

Witnesses:
D. P. GROSVENOR,
O. W. UPHAM.