L. A. FERNOW.

Machine for Drying Printed and Varnished Sheets.

No. 226,735. Patented April 20, 1880.

Fig. 1.

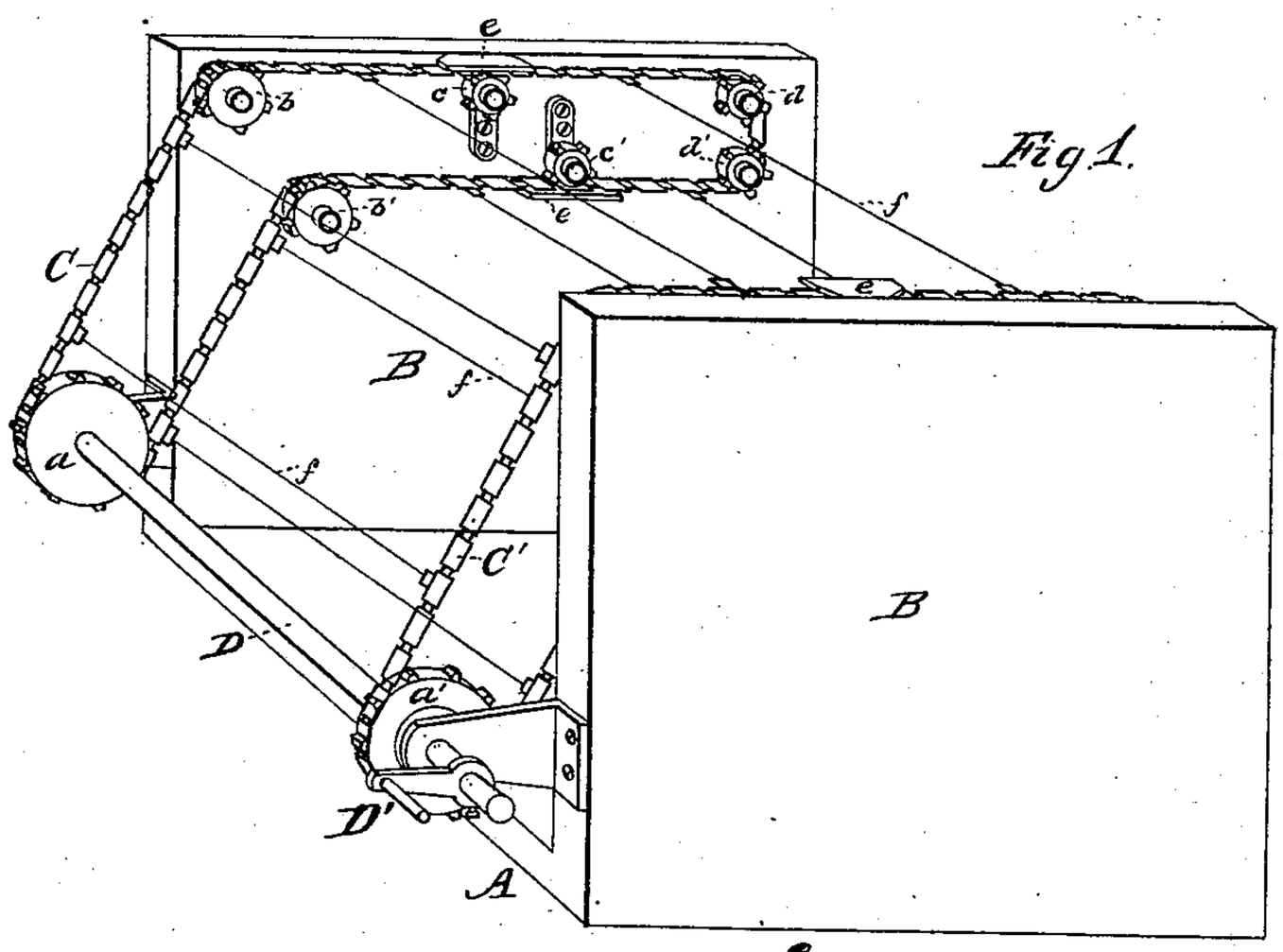
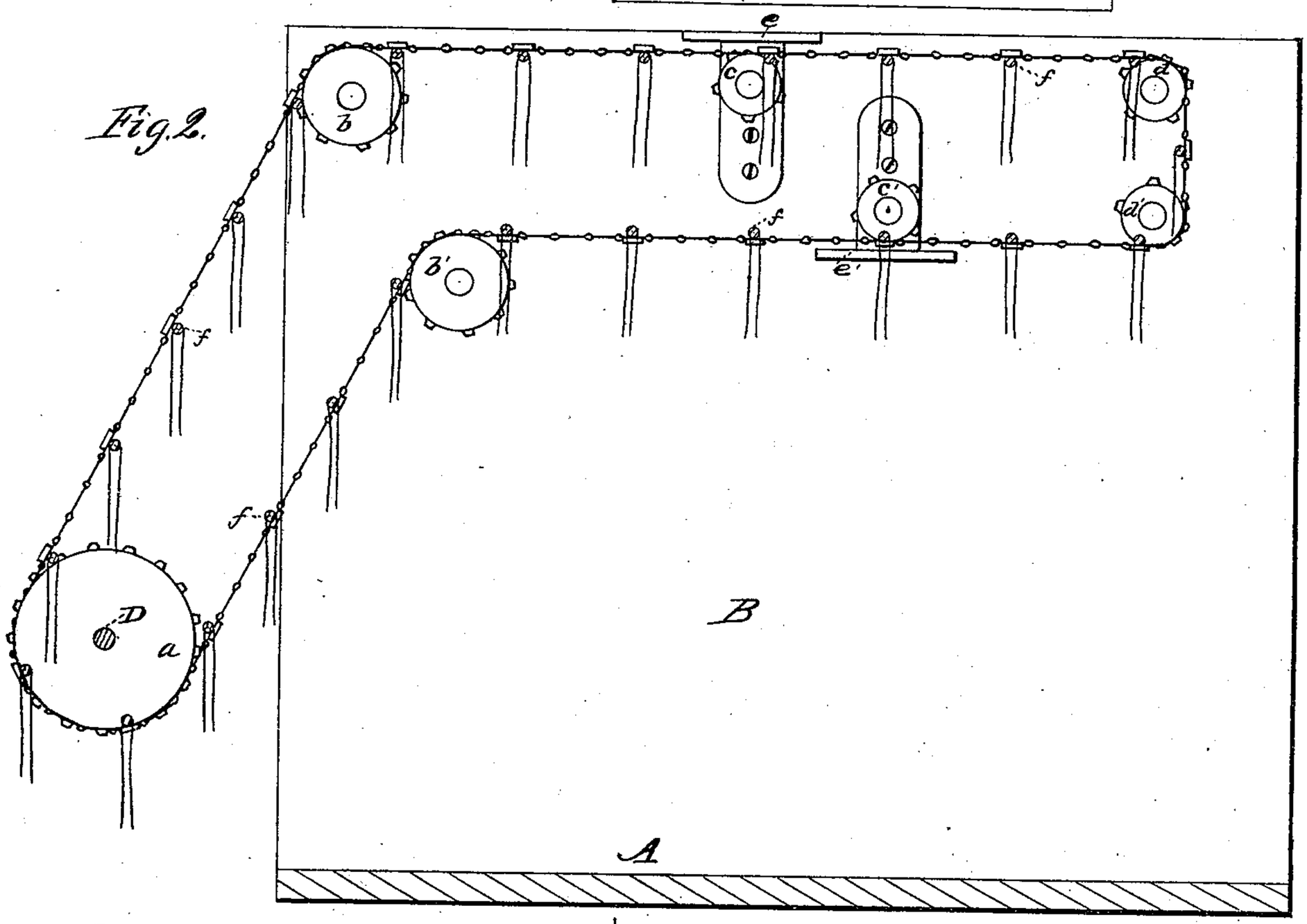
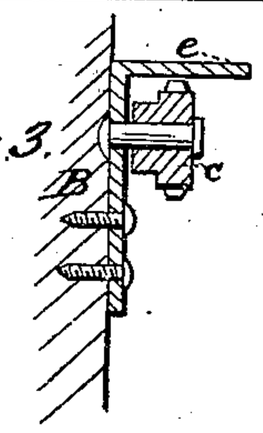


Fig. 2.



Witnesses:
F. B. Townsend
R. A. Dyer.

Fig. 3.



Inventor:
Louis A. Fernow
per Wm H. Lotz
Attorney

UNITED STATES PATENT OFFICE.

LOUIS A. FERNOW, OF CHICAGO, ILLINOIS.

MACHINE FOR DRYING PRINTED AND VARNISHED SHEETS.

SPECIFICATION forming part of Letters Patent No. 226,735, dated April 20, 1880.

Application filed January 22, 1880.

To all whom it may concern:

Be it known that I, LOUIS A. FERNOW, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Drying Printed and Varnished Sheets, of which the following is a specification.

The object I have in view is to produce a machine for drying printed and varnished sheets, more especially designed for the use of lithographers and printers, with which the sheets can be certainly and uniformly dried, so that they will not stick together or heat when packed for transportation, and the immense loss from such causes will be wholly prevented, the machine at the same time being continuous in its operation, so that when once filled the dry sheets can be taken off as fast as the wet sheets are placed upon the machine, and the machine also occupying very little space which can be used for other purposes.

My invention therein consists in the construction, arrangement, and combination of the principal parts of my machine, as fully hereinafter explained and pointed out by the claims.

In the accompanying drawings, forming a part hereof, Figure 1 is a perspective view of the machine; Fig. 2, a section of the same, showing the sheets in position to be dried; and Fig. 3, a separate sectional view of one of the guide-wheels and its pressing-plate.

Like letters denote corresponding parts in all three figures.

A is the floor of the room in which the machine is placed, and B the walls of the room, or any suitable frame-work within the room to support the machine.

C C′ are two endless chains with open links, which pass around chain-wheels *a a′* on a driving-shaft, D, mounted in brackets near the floor, and having a hand-crank, D′, at one end, or a pulley for connection with the power.

The shaft D can be of any desired length, and the wheels *a a′* placed the desired distance apart, which will depend upon the length it is wished to make the connecting-wires, and somewhat upon the size of the room.

Each chain passes from its driving-wheel up over two sprocket-wheels, *b b′*, mounted in the frame near the ceiling, and thence over one or more pairs of intermediate guide-wheels, *c c′*, which are placed between the chains, the number of such intermediate guide-wheels depending upon the length of the chains, and then around end guide-wheels, *d d′*, all of which wheels are toothed to engage with the open links of the chain. The intermediate guide-wheels have their brackets turned outwardly over the wheels to form plates *e*, which keep the links of the chains in connection with the teeth of the wheels, and prevent the same from being drawn toward each other by the weight of the sheets.

The chains are connected together at regular intervals by wires *f*, over which the sheets to be dried are hung. Each endless chain has its two parts separated far enough to prevent the sheets moving in one direction from coming in contact with those going in the opposite direction, and the connecting-wires are preferably nearly or quite the same distance apart, so that the sheets cannot swing into contact with each other.

The printed and varnished sheets are doubled, with the wet side outward, and placed upon the wires as they reach the starting-point by the turning of the driving-shaft.

The sheets on each wire may be separated by leather or other washers, (not shown,) a number of which can be loosely strung upon each wire before it is secured. After the machine is filled the dry sheets, being returned to near the starting-point, are removed from each wire before fresh ones are placed thereon, making the machine continuous in its operation.

The chains will be made long enough so that the time occupied by the movement of one wire away from and back to the starting-point will assure the uniform drying of the sheets carried by it, so that if piled up or packed they will not stick together or heat.

The machine, occupying the ceiling, takes up very little room valuable for other purposes, and the sheets are passed through the hottest air in the room.

The chains of this machine may extend along the ceilings of a number of rooms, or through a special drying-room heated to a higher degree than the other rooms; or, if there is not sufficient space for a machine arranged as shown, the endless chains could be passed

back and forth, either horizontally or vertically, over sprocket-wheels without departing from the spirit of my invention. Belts could also be substituted for the chains and rods of wood for the connecting-wires; but I prefer the construction shown.

Heretofore these printed and varnished sheets have been dried on racks in a horizontal position; but by such method the varnish often dissolves the sizing, and, soaking through, sticks the sheets to the frames, causing them to be torn when removed, and the sheets also are quite frequently not uniformly and thoroughly dried, so that when packed for transportation or placed in piles they stick together or heat and become worthless.

With my machine, however, the sheets hang vertically and free. The varnish does not dissolve the sizing. The sheets also cannot stick together or to any part of the machine, and are uniformly dried with great certainty.

To avoid the possibility of the lower edges of a sheet coming together and sticking, I propose to use wire-spreaders of general V shape, (not shown,) one or more of which will be placed on the wires under each sheet.

It will be understood that the receiving end of the machine will be situated close to the printing or varnishing machine, so that the persons operating the drying-machine and employed in placing on and taking off the sheets will be near the supply.

By my drying-machine almost the entire length and breadth of any room, more especially the space near the ceiling of each room, no matter how long or wide, can be utilized for drying varnished or printed sheets in such a way that the persons operating the drying-machine will be near the printing or varnishing machine or machines.

The drying process is quickened by the movement of the sheets through the air, which movement to and fro causes currents and counter-currents in the air.

I am aware that machines for drying long strips of wall-paper have been provided with endless chains or belts connected by cross-rods; but such machines do not return the paper to the starting-point, nor can they be used for the same purpose or in the same manner as my machine.

What I claim as my invention is—

1. A continuous-drying machine for drying separate sheets of paper, consisting of two endless chains, belts, or ropes, C C′, connected by wires or rods *f*, over which the sheets are hung, the driving-wheels *a a′*, connected by a shaft, A, and situated near the floor, and the supporting and guiding wheels, not connected by shafts, and placed at a higher elevation than the driving-wheels, whereby the separate sheets will be carried from and returned to near the starting-point without touching each other or any part of the machine except the wires or rods over which they are hung, substantially as described and shown.

2. The continuous-drying machine described for drying separate sheets of paper, consisting of the two chains C C′, connected by wires *f*, the driving-shaft A, and wheels *a a′*, the guide-wheels *b b′*, *c c′*, *d d′*, and the pressing-plates *e*, constructed and arranged substantially as set forth and shown.

LOUIS A. FERNOW.

Witnesses:
RICHD. N. DYER,
EMIL H. FROMMANN.