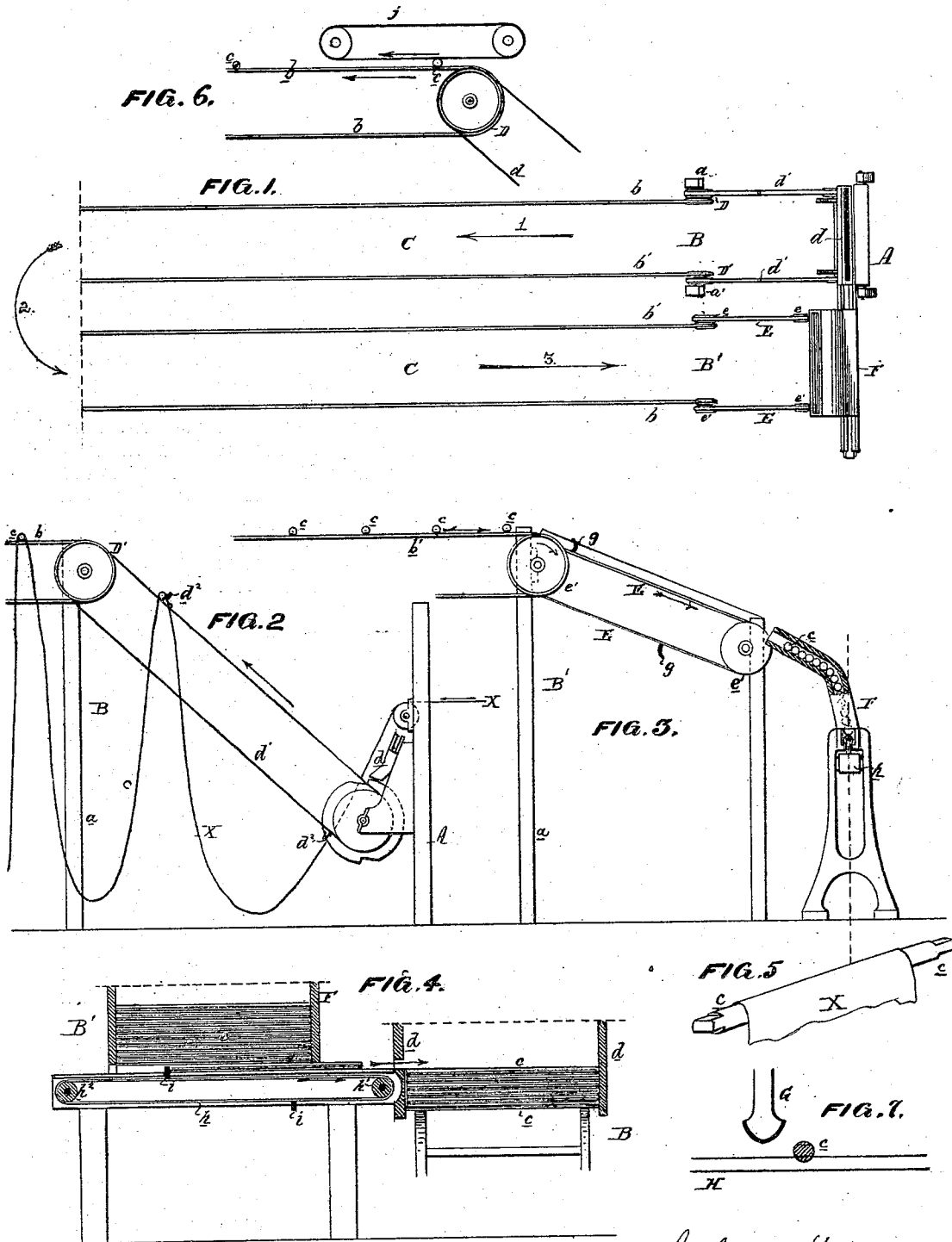


N. HALL.

Improvement in Apparatus for Drying Wall-Paper, &c.

No. 128,139.

Patented June 18, 1872.



WITNESSES { *John Parker*
John K. Rupertus

Nelson Hall
by his Attys.
Stewart and Son

UNITED STATES PATENT OFFICE.

NELSON HALL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR DRYING WALL-PAPER, &c.

Specification forming part of Letters Patent No. 128,139, dated June 18, 1872.

Specification describing Improvements in Drying Apparatus for Wall-Paper, &c., invented by NELSON HALL, of the city and county of Philadelphia, State of Pennsylvania.

Improvements in Drying Apparatus for Wall-Paper, &c.

My invention relates to improvements in that class of drying apparatus in which the paper or other material to be dried is carried in folds upon sticks supported upon endless band-conveyers; and the invention consists mainly of devices for automatically returning the sticks from the delivering to the receiving end of the apparatus; also of devices for crowding and turning the said sticks; and of an improvement in the construction of the latter.

Figure 1 is a plan view of part of a drying-frame for wall-paper, &c., with my improvements; Figs. 2 and 3, enlarged views of the receiving and delivering ends of the same; Fig. 4, a transverse vertical section on the line 1 2, Fig. 3; Fig. 5, a perspective view of one of the sticks; Figs. 6 and 7, views of devices for carrying and turning the said sticks.

A, Figs. 1 and 2, represents the delivering end of a grounding or printing machine for wall-paper, and B the receiving end of a drying-frame, indicated by the letter C, the said frame consisting, as usual, of posts *a a*, &c., in which, at a suitable elevation, are formed bearings for the journals of wheels *D D'*, around which pass endless ropes *b b'*. The paper, after having passed through the grounding or printing machine, is caught by and supported in folds upon sticks *c*, which are drawn, one at a time, from the bottom of a trough, *d*, by hooks *d'* on inclined endless bands *d' d'*, by which the said sticks and paper are conveyed upward onto the ropes *b b'* of the drier. On the latter the sticks, with the suspended folds of paper, are carried in the course indicated by the arrows 1, 2, and 3, Fig. 1, from the receiving to the delivering end of the drying-frame, from which the paper is finally drawn off onto a roll, as usual.

Ordinarily the sticks *c*, from which the paper is suspended, after being released at the delivering end of the drying-frame, fall onto the floor, so that the constant services of an attendant are required to gather up the said sticks and replace them in the trough *d*.

My improvements, which I shall now proceed to describe, have been designed mainly with the view of enabling the services of this attendant to be dispensed with, by returning the sticks automatically to the trough *d*, and thus rendering the whole apparatus self-acting.

At the delivery end of the frame C are two inclined belts, *E E*, which pass over pulleys *e e*, caused to rotate in the direction of the arrows, Fig. 3. After the sticks are released from the paper at the end B of the drying-frame they fall onto the belts *E*, and are carried downward by hooks *g* on the latter and dropped, one at a time, into the inclined portion of a trough, *F*, which is of a width sufficient to contain one row of sticks only. The bottom of said trough is open, and beneath the same is an endless belt, *h*, Fig. 4, running on two pulleys, *h' h'*, and provided with one or more projections, *i*, on its outer surface, which, at each revolution of the said belt, catches and pushes the lowermost stick from the trough *F* into the trough *d*, a stick being thus pushed into the latter at the top, as soon as one is removed at the bottom, by the projections on the belts *d'*, the supply being thus kept up in the said trough *d*. The sticks, after being carried upward by the belts *d'* onto the ropes *b b'*, are crowded or brought closely together on the latter by the action of endless belts *j j'*, situated directly above the ropes at the receiving end of the drier. (See Fig. 6.) The said belts *j* travel in the same direction as, but at a higher rate of speed than, the ropes *b b'*, the effect of which is to move each stick forward, close to that which preceded it on the ropes, and the said sticks are also revolved, when thus moved forward, which has the effect of lengthening the folds of the paper.

The sticks are constructed as shown in Fig. 5—that is, rounded in the middle and flattened at the ends, the said flattened ends resting upon and sliding on the “dead rail” *X* of the drying-frame C, and thus having no tendency to turn, as they are carried along by the ropes *b b'*. Owing to the dampness of the paper, however, it is desirable to revolve the sticks at intervals to the extent of about a revolution, so that there shall be no “stick-marks” on the paper, which there would otherwise be if the stick remained stationary during the whole course. In order to accomplish this turning a number

of bars *G* are suspended at suitable distances apart from the ceiling of the building, or from a suitable frame in the path of the round portion of the sticks, near the ends of the same, so that as the latter are carried along they will be struck and revolved by the said bars, the under part of the latter being, in the present instance, faced with rubber or other yielding material to prevent the said sticks from slipping beneath the same without turning.

My invention, although especially intended for use in connection with the manufacture of wall-paper, is, it will be evident, applicable to any drying apparatus in which the paper or other material is suspended in folds from sticks.

I claim as my invention—

1. The combination, substantially as described, with an endless-band drying apparatus and stick-trough *d*, of a conveyer, *E*, trough

or receptacle *F*, and conveyer *h* beneath the latter.

2. The round sticks *c*, constructed with flattened or squared ends, for the purpose specified.

3. The combination, with the said sticks and conveyers *b b'*, of an endless band or bands, *j*, traveling at a higher rate of speed than the said conveyer, for the purpose specified.

4. The combination, substantially as described, with the sticks and conveyers *b b'*, of fixed turning bars *G*.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NELSON HALL.

Witnesses:

WM. A. STEEL,
HARRY W. DOUTY.