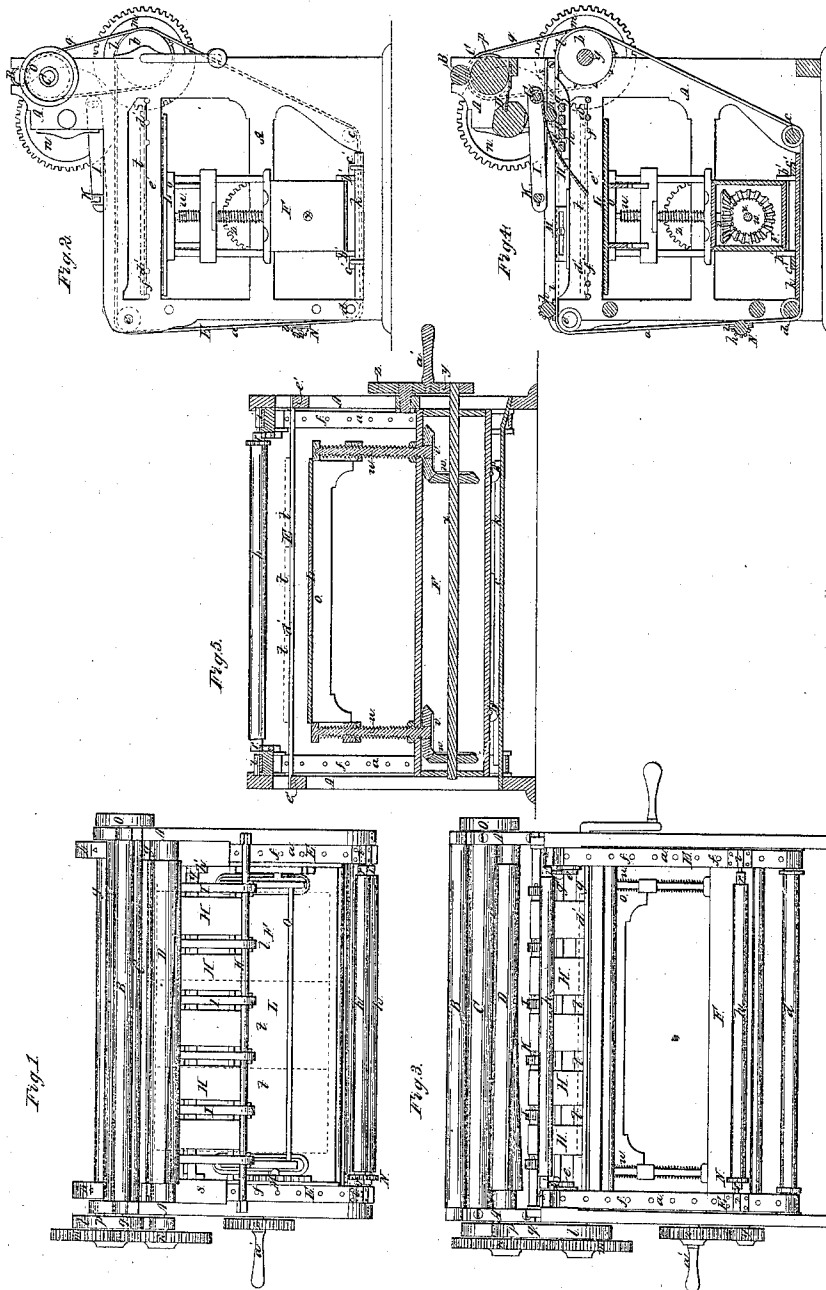


J. C. KNEELAND.
MACHINERY FOR PILING PAPER.

No. 21,004.

Patented July 27, 1858.



UNITED STATES PATENT OFFICE.

J. C. KNEELAND, OF NORTHAMPTON, MASSACHUSETTS.

MACHINERY FOR PILING PAPER.

Specification of Letters Patent No. 21,004, dated July 27, 1858.

To all whom it may concern:

Be it known that I, JOSEPH C. KNEELAND, late of the city and State of New York, but now of Northampton, in the county of Hampshire and State of Massachusetts, have invented a new and useful Machine for Laying or Piling Paper Immediately After It May Have Left the Cutter of a Paper-Making Machine; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, denotes a top view of the said machine. Fig. 2, an elevation of that end of it, out of which the carriage for supporting the pile of paper can be withdrawn. Fig. 3, is a rear side elevation of it, and Fig. 4, a transverse and vertical section of it. Fig. 5, a longitudinal section taken through the elevating screws of the carriages.

In the said drawings, A, represents the frame of the machine, it being properly constructed to receive and support the operative parts to be hereinafter described. Such frame is shown as carrying two delivery rollers B, C, and a rotary cutter, D, which properly belong to or form part of a machine for making paper in a continuous strip and cutting it into sheets.

The first portion or essential element of my improved machine or "laboy" or laying mechanism, as it may be termed, is the carrier, E, which may be thus described.

It consists, first, of two endless bands or belts, *a, a*, each being arranged to work around one of two series or sets of guide rollers, *b, c, d, e*, disposed near to the ends of the machine. Such belt is punctured with holes, *f, f*, arranged at equal distances apart and for the purpose of receiving teeth projecting from each of the rollers, *b*, which may be considered as toothed rollers fixed upon a horizontal driving shaft, *g*. When the said shaft is put in revolution the endless belt will be moved longitudinally with and by its rollers.

Second. There is applied to the said endless belts, a series of rollers, *h, h, h, h*, whose journals rotate freely in boxes or bearings, *i, i*, affixed to or carried by the belts. This carrier is arranged with respect to the rotary cutter, D, and the delivery rollers, B, C, as shown in the drawings. It also extends downward and passes underneath a platform or floor, *k*, arranged at the lower part of the frame, A, and serving to support a

carriage, F, to be hereinafter described. The drawings exhibit the shaft *g*, as carrying a pulley, *l*, and a gear *m*, and the latter as engaging with a gear, *n*, fixed on the shaft of the rotary cutter, D. They also represent the lower carrying roller, C, as having two pulleys, *o, p*, upon its shaft, one being for sustaining an endless belt for imparting motion to the roller, while the other is for carrying another endless belt, *q*, which works around it and the pulley, *l*, for the purpose of imparting motion to the shaft, *g*, in order that the carrier may be put in operation.

The next portion of the machinery is what I term the holders or holding mechanism. It is arranged over the carrier and a little in advance of the delivery rollers, and below the rotary cutter. It may be a simple roller or rod, G, or such a rod and a series of strips of cloth or other flexible material, H, H, H, H, wound around the rod and extended therefrom, as shown in Figs. 1, 3, and 4, or it may consist of a series of bars I, I, I, I, extended from the rod G, to another rod, K, arranged as shown in the drawings, the lower edges of such bars, when in their lowest positions being arranged a little within the path of the rollers of the carrier, in order that they may serve to press the paper in contact with a roller of the carrier while passing directly under them, it being understood that the supporting rods G, K, are supported at their ends in bearings of such nature as to allow the said rods to freely rise upward under the pressure of a carrier roller against the holders or holding mechanism. For dry paper, the bars I, I, I, I, are to be employed, but for wet paper, the strips H, H, H, H, are to be used.

The next portion of the machine, is the mechanism to keep each roller, *h*, of the carrier from revolving while such roller is drawing the paper along toward and over the table or the boards or contrivance for receiving the paper from the carrier, such being exhibited at L.

In the drawings, each of the carrying rollers, *h*, is represented as provided with a square end or projection *r*. Furthermore, there extends over each endless belt, *a*, (as shown in Figs. 3 and 4) a long rail or plate, *s*, which projects inward from the frame, A. This part, *s*, acting in connection with the projection, *r*, serves to prevent the roller

from being rotated while it is in the act of drawing the paper over the table and until it becomes necessary to discharge the sheet of paper upon the table, which is accomplished by the next portion of the machine, which consists of a toothed rack, M, and a pinion gear, N, the former being affixed to the frame, A, in the position as shown in Figs. 1, and 4, while the latter or gear N, is affixed to the shaft of the carrier roller, each of such rollers being provided with such a gear. During the forward motion of the carrier, the gear, N, is brought into engagement with the stationary rack, M, and put in rotation thereby so as to cause the carrier roller to revolve in a manner to discharge the sheet from itself and drop it on the table. This table as represented in the drawings, consists of one or more boards t, t, t , laid upon an elevator or frame, O, which is supported by two male screws, u, u , extending upward from the carriage F. Each of these screws has a beveled gear, v , fixed upon its lower end and made to engage with one of two beveled gears w, w , carried by a long shaft, x , arranged in the carriage and having a spur pinion, y , affixed at one end of it, as shown in Fig. 5. By rotating the shaft x , the upright screws may be set in motion, in such manner as to produce either the elevation or depression of the frame, O, and the table, L. The object of the said mechanism for operating the table is to enable it to be lowered downward as the pack of paper, which may be deposited upon it, may increase in thickness. In order to accomplish this, a cranked gear, 2, is arranged at the rear end of the machine, as shown in Figs. 1, and 5, it being made to engage with the spur gear, y . By turning the gear, z , by power applied to its crank, a' , the shaft, x , will be put in rotation.

The front end of the machine is open for the passage of the carriage, F, and the pack of paper out of the machine, such carriage being supported on wheels or rollers shown at b, b' , which rest on the platform, K, and run between guide rails, c, c' .

In order to sustain a platform or one or more boards, t , while a carriage with a pack of paper is being removed from or is out of the machine and thus enable the laying mechanism to continue its operating without stopping, I make use of two or more bars or rods d', d' , which are to be supported by two bars, e', e' , or their equivalents connected with the frame of the machine, such bars e', e' , being arranged as shown in Figs. 2, and 5. The bars d', d' , when in place rest in notches, f', f' , made in the bars e', e' . The board or boards t, t , constituting the platform are laid on the bars d', d' , and are sustained by them while the carriage is being removed from or is out of place in the machine. After a pile or

pack of paper has been removed from the carriage and the latter returned to its proper position within the machine, its frame, O, should be elevated up to the board or boards, t , so as to raise it or them off the rods, d', d' , and enable the said rods to be removed laterally from underneath the said board or boards, t , and this in order that such boards may be sustained by the frame, O, and its carriage.

In connection with the laying mechanism, and particularly with the carrier thereof, I employ one or more horizontal bars, g', g' , disposed as shown in Figs. 3, and 4, such bar or bars being supported by two racks, h', h' , arranged as shown in the drawings. These bars, g', g' , are guards, their object being to prevent the sheet of paper while it is being carried forward by a carrier roller from being drawn against the rear edge of the pile or pack which may be on the table, L, or what is the same the boards t, t , and being torn or injured thereby.

In the operation of this machine, the strip of paper as it hangs from the lower delivery roller is met by one of the carrier rollers and moved toward and against the holders or holding mechanism, this having taken place, the cutter immediately severs a sheet from the strip; next, the sheet lapped over the carrier roller is moved forward until the lower or rear end of the sheet drops upon the table on the pack thereon; as soon as, or soon after such dropping of the sheet takes place, the mechanism for rotating the carrier roller on its axis comes into operation and causes the roller to revolve in a manner to discharge the front end of the sheet from the said roller and enable the said sheet to fall on the table or the pack underneath it.

One great advantage of my machine over other laboys in use, is, that by means of it, the paper when in a wet state is laid horizontally in a pack, or in other words, is disposed in a horizontal plane on the table.

I might enumerate several other important advantages which my machine possesses but I do not deem the same necessary as such will be readily discovered by experienced paper makers.

Having thus described such machine, what I claim is as follows,

1. I claim a combination composed of the following elements: 1st, a carrier E, made of endless belts and rollers or their equivalents and arranged substantially as specified; 2nd, holders or holding mechanism consisting of a rod or roller G, one or more flexible strips H, H, or bars I, I, or equivalent devices; 3rd, mechanism to keep each roller of the carrier from revolving while such roller is drawing the paper along over the table; 4th, mechanism to cause the roller

to revolve and discharge the sheet of paper at the proper time as specified; 5th, a table L or its equivalent to receive the paper from the carrier.

5 2. And in combination with the above described laying mechanism or combination of mechanical elements, I claim one or more bars or guards, *g'*, *g'*, arranged substantially as specified and so as to prevent the
10 sheet of paper while being carried forward

from being drawn against the rear edge of the pack on the table and being torn or injured thereby.

In testimony whereof I have hereunto set my signature.

JOSEPH C. KNEELAND.

Witnesses:

I. A. KNEELAND,
SAMUEL WELLS.