

H. R. HEYL.

MACHINES FOR CUTTING AND KERFING PAPER FOR BOXES.

No. 175,458

Patented March 23, 1876.

FIG. 1.

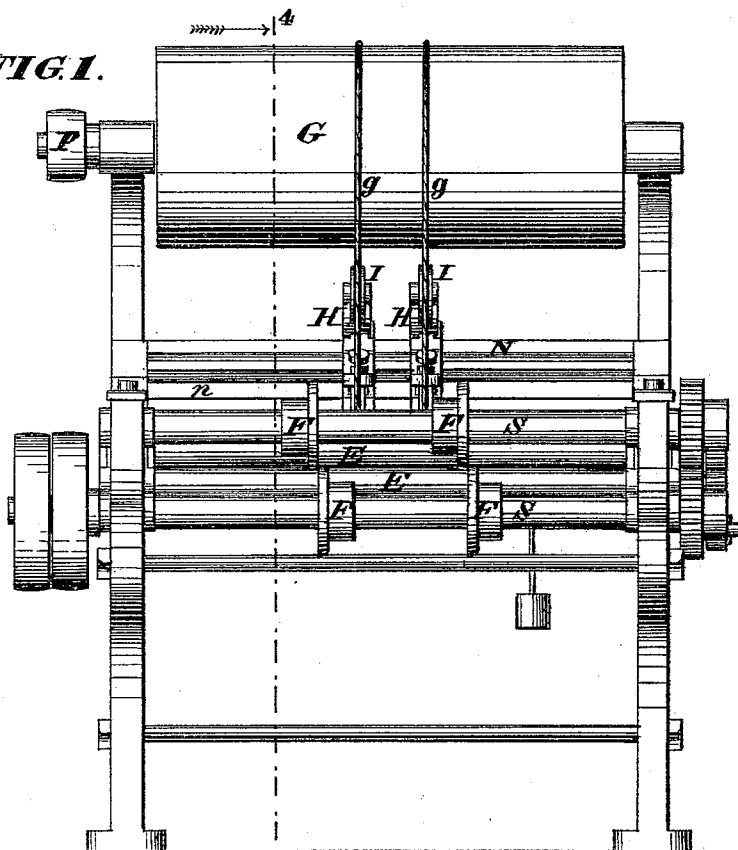
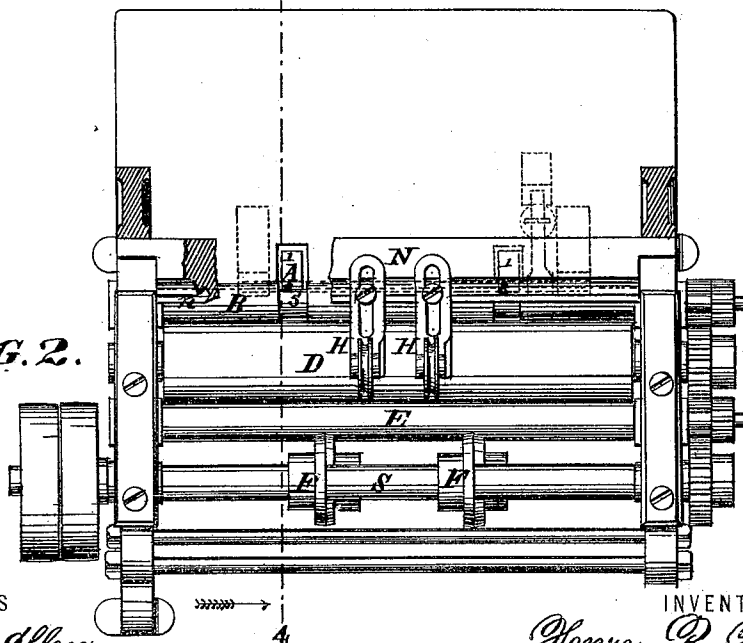


FIG. 2.



WITNESSES

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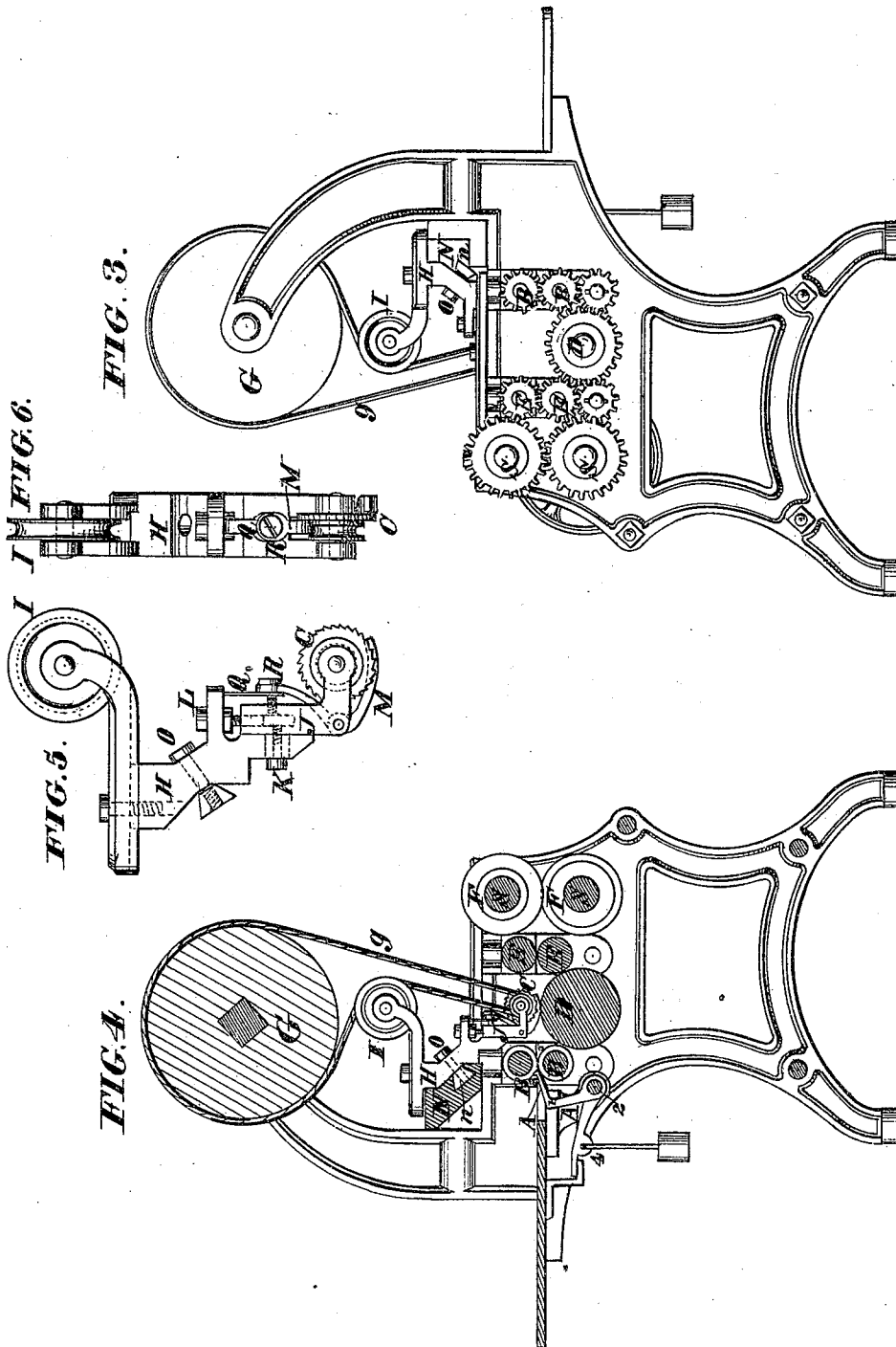
By *Freight Bros.* Attorneys

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UNITED STATES PATENT OFFICE.

HENRY R. HEYL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
NOVELTY PAPER BOX COMPANY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR CUTTING AND KERFING PAPER FOR BOXES.

Specification forming part of Letters Patent No. **175,458**, dated March 23, 1876; application filed
May 23, 1874.

To all whom it may concern:

Be it known that I, HENRY R. HEYL, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Machine for Cutting and Kerfing Paper and Pasteboard for Boxes, of which the following is a specification:

The nature and purpose of the invention are to combine in one machine the necessary devices for severing a sheet of pasteboard into smaller pieces adapted to form the body of a paper box, and at the same time to make the necessary kerfs in these pieces of pasteboard at the lines where they are to be bent into box form, the kerfs referred to being an improvement on the usual method of scoring employed in the manufacture of all other pasteboard boxes, except those known as H. R. Heyl's patent wire-fastened boxes, and made by improved machinery, for which patents have also been granted to the same inventor. The object of thus kerfing the board is to provide a suitable substitute for the ordinary score, so that the board can be covered with its covering-paper in the sheet, and afterward bent into box form without marring the corner outside. To this end the board is thinned from the inside of the box by a flat saw-kerf about one-sixteenth of an inch in width, and just deep enough to permit the board to be bent at right angles without straining the cover-paper sufficiently to part it along the corners of the box.

In the accompanying drawings, Figure 1 is a rear view of a machine illustrating my invention. Fig. 2 is a plan of the same, partly in section. Fig. 3 is a side elevation thereof. Fig. 4 is a vertical section on the line 4 4, Figs. 1 and 2. Fig. 5 is a side elevation of the saw-stock. Fig. 6 is a rear view of the same.

By reference to the drawings it will be seen that I employ an adjuster, A, to bring the entering edge of the pasteboard parallel with the first pair of feed-rollers, B, before entering. The board is then pushed between the feed-rollers and carried into the machine. Immediately after the first feed-rollers is a series of circular saws, C, and a cylinder, D, between which the sheet of paste-board passes, and re-

ceives the requisite number of kerfs in its surface; thence it is taken up by a second pair of feed-rollers, E, and carried forward and received between two series of circular cutters, F, which sever the sheets into strips of any desired width. Then by readjusting the saws and cutters, and passing these strips again through the machine at right angles to their long sides, they will be again kerfed and severed into box-blanks of the required size.

It is obvious that in order to construct a square box the blank must be trimmed and scored or kerfed in perfectly rectangular shape, and therefore in cutting the pasteboard the second time it is important that it should enter the machine accurately at right angles to the first cut sides. Therefore, to have the pasteboard properly adjusted before it is pushed into the machine, and to avoid delay in rapid feeding, for quick handling is all-important in saving cost of manufacture, I employ the device A to direct the pasteboard as it enters the machine. The series of arms 1 1 placed at short intervals on the rock-shaft 2 are so set that the toes 3 3 stand in line with each other, and parallel with the feed-rollers and cutter-shafts of the machine. These toes project above the table high enough to stop the sheet of pasteboard as it is pushed forward to enter the machine. The weighted lever 4 projecting from the rock-shaft gives resistance enough to the toes to enable them to keep back the pasteboard from entering the machine until its edge is fairly against them throughout its whole length. Then by a firmer push at the hands of the operator the resistance of the toes is overcome, and they give way and pass into the grooves 5 in the feed-rollers B, and the paste-board being caught between the feed-rollers is carried squarely into the machine.

It will be seen from the position of the rock-shaft 2 that the toes 3 3 in being pushed forward describe an arc, which soon carries them below the plane of motion, which the pasteboard is forced to take, and will release the edge of the pasteboard, and remain in contact with its under side until the whole sheet has passed over them, when they will immediately return to their first position to direct

the entry of other sheets, which may follow the first as rapidly as the operator can handle them, and may be within an inch of each other, if he can feed them so fast. Thus, by this simple mechanism, very little care on the part of the operator is required, for it is next to impossible to feed a sheet otherwise than squarely.

The only other part of the machine which I consider novel is the device for kerfing the pasteboard, which consists of a series of independent circular saws, C, adjustable in relation to the face of a revolving cylinder, D, directly under them, above which the sheets of pasteboard must pass, and also adjustable sidewise, as required, by the varying dimensions of different boxes. Each saw is set in an independent stock, H, having its pulley-tightening sheave I for taking up the slack of the belt, a bearing-bracket, J, with set-screw K, and adjusting-screw L, and an adjustable guard, M. These saw-stocks are set upon a beam, N, having a planed face corresponding in shape to that part of the saw-stock which rests against it, and having throughout its length a slot, n, to admit the heads of the bolts O that secure the saw-stock to it at any point along its face. By using the adjusting-screw L and the set-screw K each saw may be set to cut to any desired depth. The guard M is placed close by the side of each saw, and serves to keep the pasteboard down solidly upon the revolving cylinder D, so that the saw cannot tear up and cut entirely through the pasteboard. The spring Q serves to give the guard sufficient pressure upon the pasteboard, and also admits of the passage of ine-

qualities in the board, while the saw remains firm, and cuts always within a fixed depth from the cylinder D. The screw R serves to prevent the guard M from touching and wearing upon the cylinder. The driving-drum G gives motion to all the saws in use at one time through narrow or round belts g connecting it with each saw.

By reference to Fig. 3 it will be seen that the two pairs of feed-rollers B E, the cylinder D, and the cutter-shafts S are all geared together, so that they run with uniform speed and in one direction, while the drum G, which drives the saws, is driven by a separate belt on a small pulley, P, in order that it may run at a much greater speed.

The following is claimed as new—

1. The weighted adjuster A, constructed and operating as described, to adjust the edge of the sheet and recede by the continued pressure thereof, as explained.

2. The combination of the driving-drum G and the several adjustable saw-stocks H, each carrying a sheave, I, a driving-cord, g, a kerfing-saw, C, and a guard, M, placed close beside the saw for the purpose of keeping the paper or pasteboard firmly down upon the cylinder D, as explained.

3. The combination of the feed-rollers B, kerfing-saws C, cylinder D, and cutters F for kerfing and cutting paper or pasteboard, in the manner and for the purpose specified.

HENRY R. HEYL.

Witnesses:

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WALTER ALLEN.