No. 823,850. PATENTED JUNE 19, 1906.

F. B. DAVIDSON & J. WESSON.

MEANS FOR DAMPENING THE SCORE LINES OF FOLDING BOX BLANKS.

APPLICATION FILED AUG. 7, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

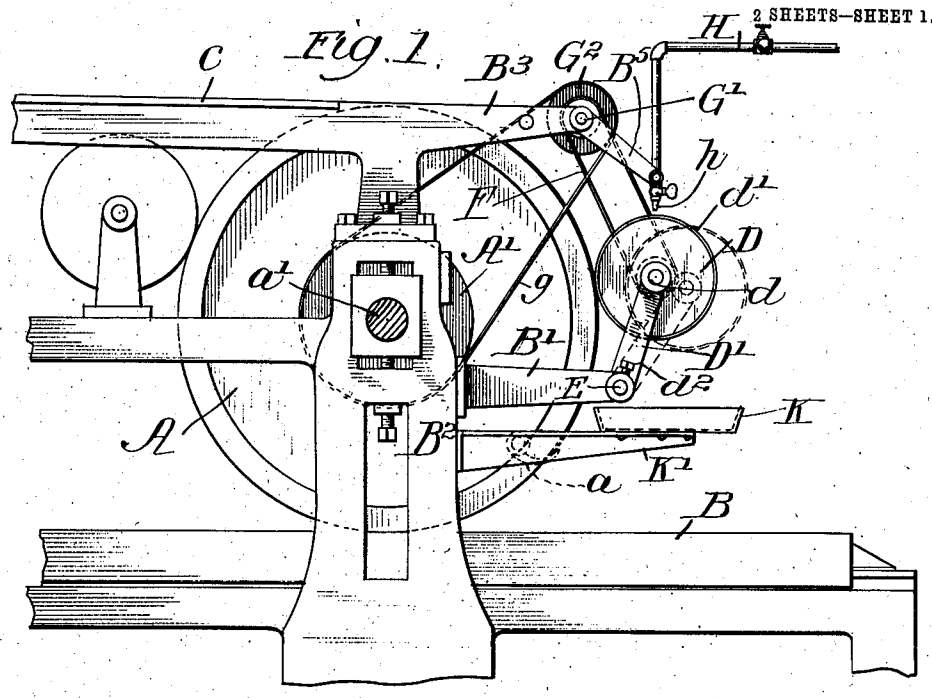
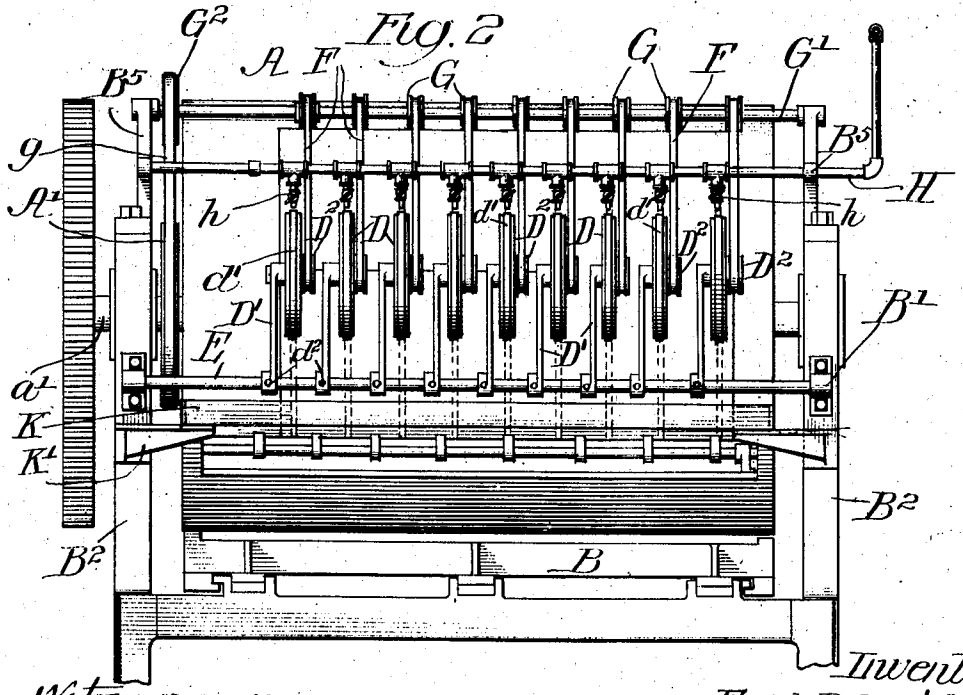


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3

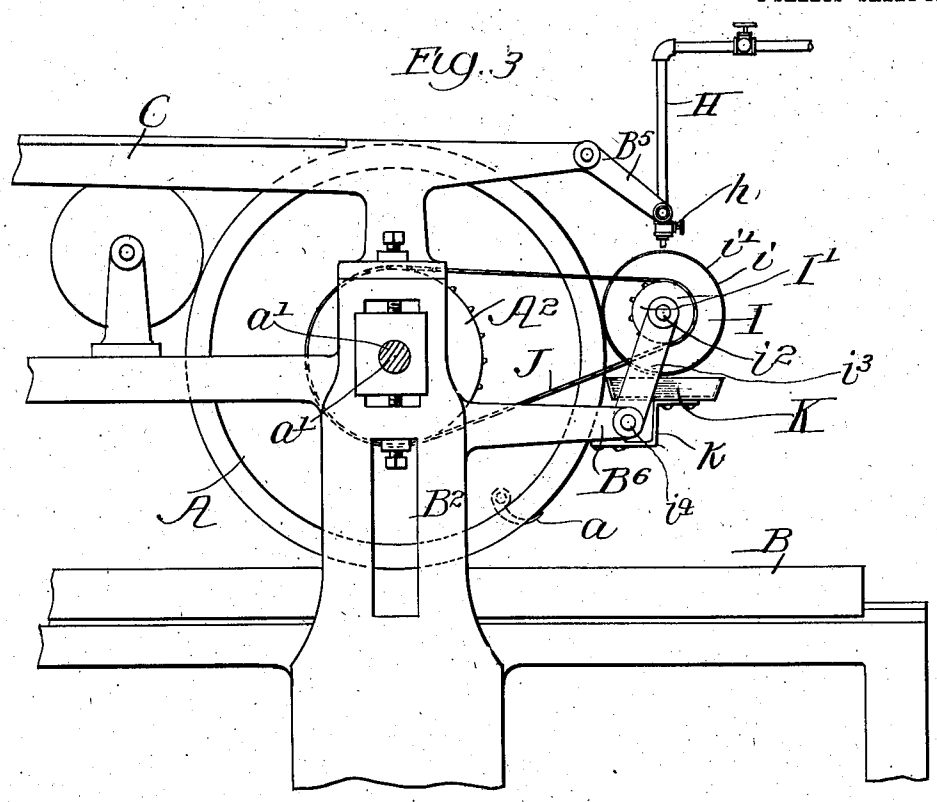
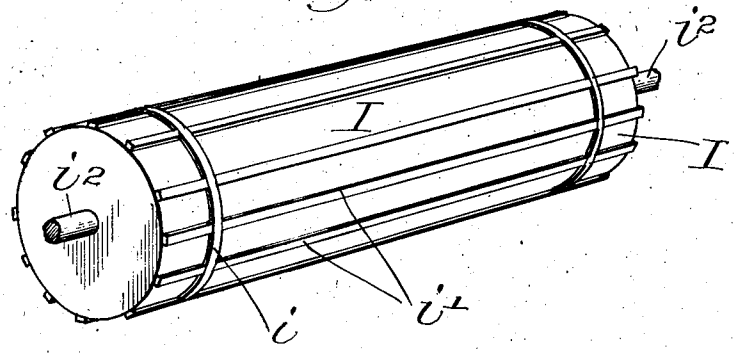


Fig. 4



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UNITED STATES PATENT OFFICE.

FRANK B. DAVIDSON AND JOSEPH WESSON, OF MARSEILLES, ILLINOIS, ASSIGNORS TO HOWE AND DAVIDSON COMPANY, OF EAST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MEANS FOR DAMPENING THE SCORE-LINES OF FOLDING-BOX BLANKS.

No. 823,850. Specification of Letters Patent. Patented June 19, 1906.

Application filed August 7, 1905. Serial No. 273,186.

To all whom it may concern:

Be it known that we, FRANK B. DAVIDSON and JOSEPH WESSON, citizens of the United States, residing at Marseilles, in the county of Lasalle and State of Illinois, have invented certain new and useful Improvements in Means for Dampening the Score-Lines of Folding-Box Blanks; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a machine for dampening card or straw board sheets used in the manufacture of knockdown cartons preparatory to scoring the sheets upon the lines about which the walls of the cartons fold, thereby avoiding the tendency of the scoring-knives to unduly weaken the sheets or blanks at the score-lines. When using paper or straw board in the manufacture of cartons, it often occurs that the board is so brittle that the scoring-knives act to break the fibers of the board along the scoring-lines to such extent that when the sections of the blank are folded along such lines the sections break away from each other, thus producing a damaged carton. In order to obviate the liability of breaking the material of the blanks along the score-lines, we propose to dampen narrow areas of the sheet which are to be acted upon by the scoring-knives, and thereby soften the surface fibers, so that the subsequent scoring operation does not break said fibers. Said dampening device preferaby constitutes an attachment to a cutting and scoring press, the latter usually embracing a rotative impression-cylinder and a coöperating platen, either rotary or reciprocatory, which carries the scoring-form by which the sheet or blank is scored and cut in a familiar manner. The dampening device when applied to this type of press consists of a plurality of dampening-surfaces which are brought into contact with the blank while on the impression-cylinder, and just before the blank is brought into engagement with the form on the form-carrying member of the press said dampening-surfaces being so located that the dampening areas produced thereby will register with the scoring-knives of the scoring-form. Desirably the dampening-surfaces are mounted so as to be carried by rotative movement against the sheet to be scored. The device is so constructed and arranged that the dampened areas produced thereby may correspond in number with all or a less number than all of the score-lines to be thereafter impressed upon the blank.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of a scoring-press of the character mentioned, showing our improved dampening attachment applied thereto. Fig. 2 is a rear view of the parts shown in Fig. 1. Fig. 3 is an end view of a scoring-press provided with a modified form of our attachment. Fig. 4 is a perspective view of a roller carrying the moistening-surfaces used in the machine shown in Fig. 3.

First, referring to the form of device shown in Figs. 1 and 2 and the press to which it is applied, A designates the impression-cylinder, and B the reciprocating scoring-form bed of a reciprocating-bed scoring-press. C designates the feed-table over which the sheets are fed to the cylinder, and *a a* designate the gripper-fingers which grip the front margins of the sheets to wind the same about the impression-cylinder. The construction of the press constitutes no part of the present invention and need not be referred to further in detail.

The moistening-surfaces of the moistening device shown in Figs. 1 and 2 are carried by a plurality of independently-operable disks D, which are rotatively mounted on short shafts *d*, carried by the upper or outer ends of arms D′, which are severally and adjustably fixed to a horizontal rod E, extending between and fixed to arms B′, extending rearwardly from the side members B^2 of the press. Said wheels or disks D are freely rotatable on their shafts *d* and are provided on their peripheries with suitable strips *d′* of absorbent material, as felt, which constitute the moistening-surfaces. The disks D are so mounted as to rotate with their moistening-surfaces in contact with the straw or card board while the latter is being carried by the impression-cylinder to the scoring-form of the

press, thereby moistening the straw or card board along parallel areas, as indicated in dotted lines below said disks in Fig. 2.

The disks or wheels D are rotated from a common source of power by means of belts F, individual to the several wheels, trained about pulleys D^2, fixed to or integral with said disks, and trained also about pulleys G G, fixed to a horizontal transverse shaft G', that is mounted at its ends in arms B^3, extending rearwardly from the main frame of the press at the sides thereof. Said shaft G' is rotated through the medium of a belt *g*, that is trained about a pulley G^2, fixed to the shaft G' and trained also about a pulley A', affixed to the shaft *a'*, carrying the cylinder. The supporting-arms D', carrying the shafts *d*, on which the disks D are mounted, are separately adjustable toward and from the impression-cylinder, whereby either disk and its associated dampening-surface may be thrown out of action. Such adjustment is afforded, as herein shown, by fastening the arms D' to the rod E by means of set-screws d^2, that extend through sleeves at the ends of the arms surrounding the shaft and impinge against said shaft. In order to throw an arm D' rearwardly to carry its disk away from the cylinder, as shown in dotted lines in Fig. 1, the appropriate belt F is loosened or removed and the set-screw released sufficiently to permit the arm to swing backwardly, after which the set-screw is again tightened.

The dampening-surfaces are supplied with water to moisten the same through the medium of water-pipe H, which extends transversely in rear of the cylinder and is supported on arms B^5 B^5, constituting extensions of the arms B^3, Fig. 1. Said water-pipe is provided with a plurality of valved discharge-nozzles *h*, located one over each of the disks or wheels. The proper opening and closing of said valved nozzles permits the dampening medium to be furnished to all or less than all of the dampening-surfaces carried, as desired.

In Figs. 3 and 4 is shown a modification of the attachment wherein the dampening-surfaces are carried by a cylindrical roller extending from end to end and in rear of the impression-cylinder. In said figures, I designates a moistening-surface-carrying roller, and *i* and *i'* designate the moistening strips or surfaces, the former encircling the roller and the latter extending lengthwise thereof. A single or both sets of the moistening-surfaces *i i'* may be employed. If both sets be employed, intersecting sets of dampened areas will appear on the blank, which in the continued rotation of the impression-cylinder are brought into register and contact with the knives of the scoring-form. Said moistening-surfaces *i i'* consist of felt or other absorbent material attached to the roller in any suitable manner. In this form of attachment it is essential that the longitudinal dampening strips or surfaces be so disposed and that the roller I be so geared to the operative parts of the press that the longitudinal strips or surfaces shall impress upon the sheet-moistened areas which shall register with the appropriate knives of the scoring-form on the bed, or those which are disposed transversely to the path of reciprocation of the bed. The shaft i^2 of the roller I is rotatively mounted in arms i^3, rising upwardly from and fixed to a shaft i^4, mounted at its ends in rearwardly-extending arms B^6 of the press-frame. The roller is rotated through the medium of a sprocket-chain J, which is trained about a sprocket-pulley I' on the shaft i^2, and a sprocket-wheel A^2, carried by the shaft *a'* of the impression-cylinder.

We may employ a greater of less number of strips than shown in Fig. 4 and differently located on the roller to accord with different carton-blanks whose score-lines are located at various distances apart. The same arrangement for supplying moisture to the moistening-surface of the roller I may be employed except that the nozzles *h* should be located somewhat nearer to each other in order to uniformly distribute the dampening agent to the longitudinal moistening-surfaces *i'*.

Desirably a suitably-shaped drip-pan K (shown in both Figs. 1 and 3) is located beneath the moistening-surface to prevent water dripping therefrom to the reciprocating bed below. Said pan is shown in Fig. 1 as supported by means of arms K', extending rearwardly from the press-frame. In Fig. 3 the pan is supported on brackets *k*, attached to the rearwardly-extending arms B^6.

We claim as our invention—

1. The combination with a scoring-machine, of means for dampening prescribed areas of a sheet or blank to be scored preparatory to scoring the sheet along said areas.

2. The combination with a scoring-machine, of dampening-surfaces adapted to be moved into contact with a sheet or blank to be scored along prescribed areas preparatory to scoring the blank along said areas.

3. The combination with a scoring-machine, of dampening-surfaces adapted to be moved into contact with a sheet or blank to be scored along prescribed areas preparatory to scoring the blank along said areas, said dampening-surfaces being constructed to be adjusted to vary the width apart of the dampened areas on said sheet.

4. The combination with a scoring-press, including a rotary impression-cylinder, of means for dampening prescribed areas of a sheet or blank preparatory to scoring the sheet along said areas.

5. The combination with a scoring-press, including a rotary impression-cylinder, of ro-

tary dampening-surfaces adapted for contact with the sheets or blanks while on the cylinder to dampen prescribed areas of a sheet or blank preparatory to the scoring of the same along said areas.

6. The combination with a scoring-press, including a rotary impression-cylinder, of rotary dampening-surfaces adapted for contact with sheets or blanks while on the cylinder to dampen prescribed areas of the sheet preparatory to scoring of the same, said dampening-surfaces being removable whereby they may be adjusted to dampen variously-located areas of the sheet.

In testimony that we claim the foregoing as our invention we affix our signatures, in presence of two witnesses, this 17th day of July, A. D. 1905.

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JOSEPH WESSON.

Witnesses:
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A. T. ADAMS.