

SCORING MACHINE.

1,033,881.

3 SHEETS—SHEET 1.

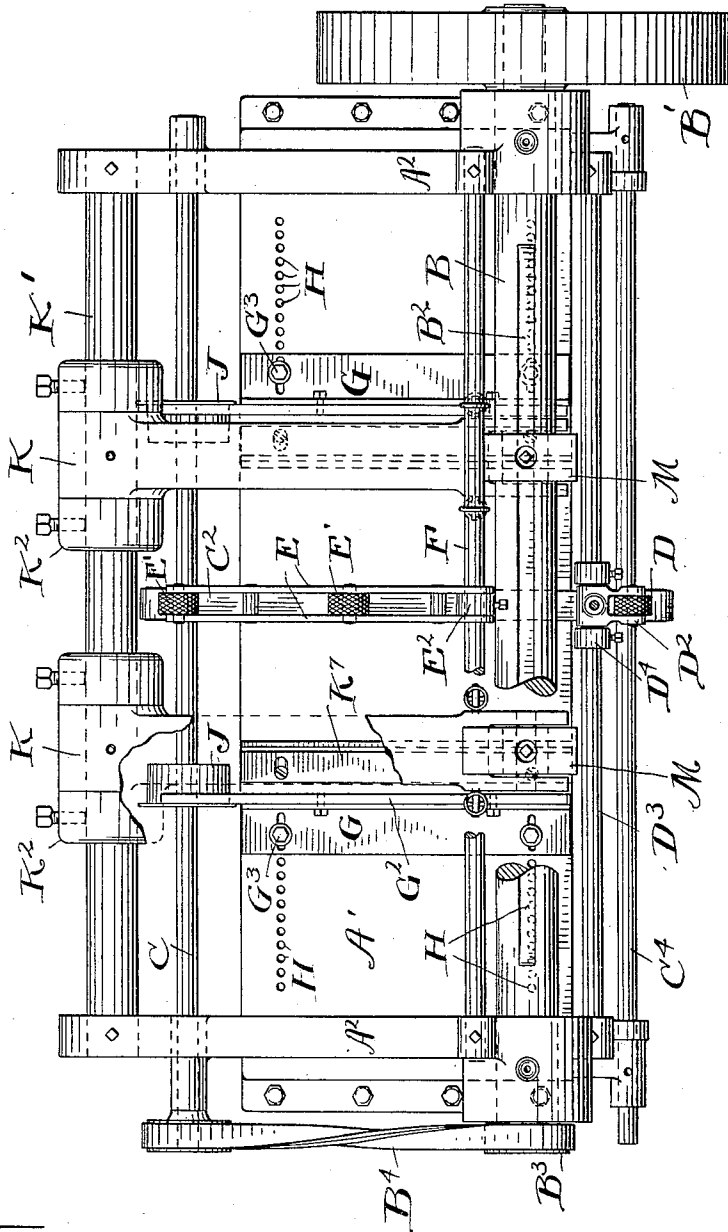


Fig. 1.

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3 SHEETS—SHEET 2.



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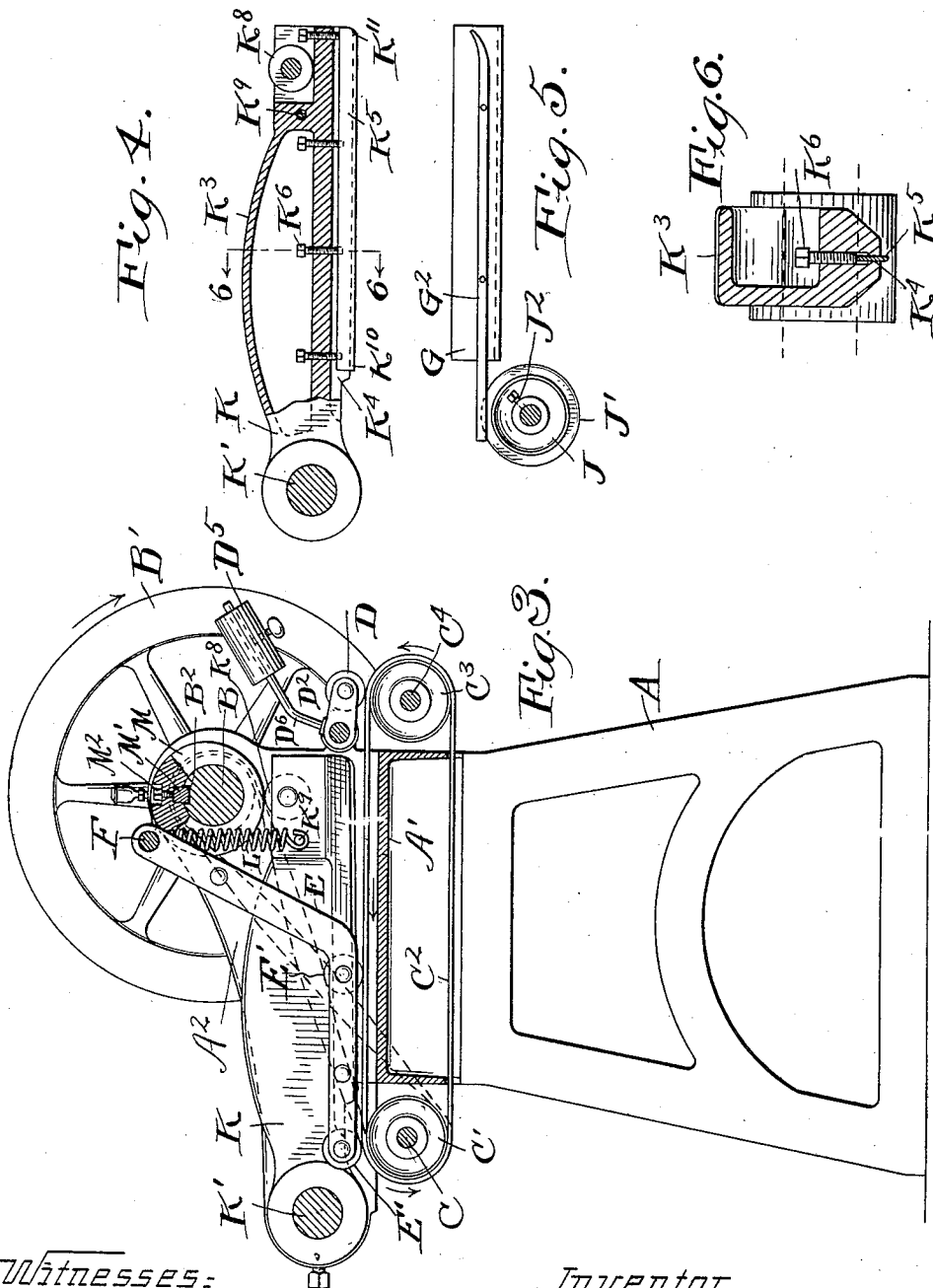
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SCORING MACHINE.
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3 SHEETS—SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SCORING-MACHINE.

1,033,881.

Specification of Letters Patent.

Patented July 30, 1912.

Application filed April 5, 1905. Serial No. 253,987.

To all whom it may concern:

Be it known that I, JOHN W. DENMEAD, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Scoring-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of the invention which forms the subject of this application is to provide means for effectually and satisfactorily creasing or scoring paper and like material. Heretofore in the making of paper boxes I have employed machines fitted with both scoring and cutting blades fixed upon a supporting platen in such manner that when the web was fed thereto and the platen reciprocated the cutting blades would cut out the box blank while at the same time the scoring or creasing blades would, when sufficient pressure was applied, indent and crease the blank in the proper manner. In order to relieve the machines in part of the pressure necessary to perform this dual operation satisfactorily, I have used supplemental creasing mechanism to effect such straight line scoring as might be accomplished supplementary to the main operation. These supplemental creasing mechanisms have hitherto been constructed with circular scoring blades which, while appearing in theory to be the most efficient, because rapid, means for such purpose, are subject in fact to an exceedingly annoying weakness, which develops when operating on particular grades of material, and manifests itself in the buckling of the sheets as they are fed into the machine.

My machine is not open to the objections above noted, and is constructed in such manner that the scoring blade does not bear continuously against the material fed in, and does not develop a tendency to buckle the same.

Referring to the accompanying drawings, illustrating a machine embodying the principles of my invention, Figure 1 is a plan view of the same with portions of the mechanism broken away in order to disclose the underlying parts. Fig. 2 is a front elevation of the same with certain parts broken away. Fig. 3 is a vertical section taken along the line 3—3 of Fig. 2. Fig. 4 is a longitudinal section of the creasing arm. Fig. 5 is a side

elevation of a lateral guiding frame and guide wheel. Fig. 6 is a transverse section on the line 6—6 of Fig. 4.

The machine is provided with suitable supporting means A and a bed plate A' carrying at each end frames A² A², in which are fixed or journaled the supporting rods or shafts of the operating parts.

Toward the front and upper portions of the frames A² A² is journaled the main shaft B, provided with a longitudinal groove B², turned by the driving wheel B³ and transmitting through the pulley B³ and belt B⁴ motion to the shaft C, which bears the feed roller C'.

About the feed roller C' passes the feed belt C² which, at the opposite side of the machine, passes over the pulley C³. The pulley C³ is fixed by any suitable means, such as a set screw C⁵, in proper position upon a shaft C⁴ journaled in suitable boxes projecting from the end frames.

Lying above the roller C³ and bearing upon the feed belt is a pressure roller D carried in a suitable yoke D² loosely journaled on a shaft D³ and properly positioned thereon by stop collars D⁴. Suitable pressure is applied to the roller D by means of an adjustable weight D⁵ secured upon an arm D⁶ rigidly attached to the yoke D² in such manner that it acts as a lever by which to transmit pressure of the weight of the roller.

Toward the back of the machine are other pressure rollers E', E', bearing upon the feed belt and supported in a frame, in this instance formed of two elbow arms E E properly spaced from each other, which elbow arms are themselves supported by and journaled on a transverse shaft F extending between the end frames A² A². The frame E E is properly positioned upon the shaft F by means of a collar E².

The material fed through the machine by the mechanism above described is guided therein by means of suitable side guides G G. These guides, as shown, are angle pieces provided on their inner upright sides with strips G², under which the outer edges of the material are retained. These lateral guides are, as shown, provided in their horizontal flanges with suitable slots and bolts whereby they may be shifted sidewise to whatever extent may be desired upon the bed plate,—the latter being provided with

suitable holes H, H to permit such adjustment. To the rear of these lateral guides and journaled upon the shaft C are guiding rolls J provided with exterior guiding flanges J' and held in position upon the shaft C by some suitable means such as a securing screw J².

The creasing arms K are journaled at the rear of the machine upon the shaft K' and spaced thereon by suitable screw-set collars K². These arms K are provided with central arches K³, as is usually the case for the purpose of strength, and are channeled upon the side throughout the major portion of their length. Along their lower edge they are provided with grooves K⁴ for the reception of the creasing or scoring blades K⁵, which are frictionally held therein. These scoring blades are adjusted as to their depth of action by means of adjusting screws K⁶ passing through the arm and into the slot behind the blades. Operating in conjunction with these scoring blades are female dies K⁷ capable, in a manner like that of the guides G, of lateral adjustment across the bed plate.

The forward end of the scoring arms K is provided with an anti-friction roller K⁸ suitably supported thereon. At or near the forward end are also provided pins K⁹ to which are attached the springs L which being secured at their upper ends to the transverse shaft F serve to support the free ends of the scoring arms and normally retain them in such position that the scoring blades K⁵ are out of contact with the material fed into the machine.

Upon the shaft B are mounted cam eccentrics M which are positioned over and adapted to bear upon the anti-friction rollers K⁸. These eccentrics are keyed to the shaft B by means of short keys M' slidable in the groove B² of the shaft B, and provided with fastening screws M² set through the eccentric, as shown in Fig. 3. By these securing means, it will be seen that these eccentrics can, like other portions of the feeding and scoring mechanism, be properly positioned according to the nature of the work being done.

From the arrangement of parts, as above described, it will be seen that material to be scored may be fed into the machine by merely placing the edge between the pressure roller D and the belt-carrying roller C². The adjustment of the parts may be such that the material may be fed along, within reasonable limits, any desired distance before the eccentric shall be turned so as to bear upon the anti-friction roller K⁸ and thereby depress the scoring arms K against the tension of the springs L until the blades K⁵ shall come in contact with and be pressed into the material being operated upon. While this scoring is being effected

the friction belt C², not being of a positive feeding character, will merely slide beneath the material. Upon the release of the material by the scoring blades, however, the belt C² will again feed it forward, and the distance of such feed may, by changing the sizes of the pulleys or by other adjustment, be regulated so as to either pass the material so far along that upon the next descent of the scoring blades they will rescore two-thirds or one-half, or any other fraction, of the scoring lines which they first impressed.

It will, of course, be obvious that the material may be passed so far along that each subsequent descent of the scoring blades will come in such position as to entirely clear or form a continuous line with the scores first formed. It will be seen by this arrangement that I am enabled to apply the blades several times successively to the scoring lines and effectively score very tough and refractory material, and yet be able to adjust the machine so as to cause it to work equally well with the material which would require but one impression to be effectively creased.

It has been found in operating reciprocating scoring blades of the type above described that more satisfactory results are obtained when the blade is caused to approach the material operated upon in such manner that one end of the blade strikes the material before the other, thus causing the blade to have a swinging movement rather than one which is perfectly normal to the surface. To secure this result, it is possible to adjust the blade K⁵ within its receiving slot so that the heel K¹⁰ thereof shall come in contact with the material before the toe K¹¹ and before the latter is depressed to its lowest position. The parts are, of course, so adjusted that when the blade is fully depressed the lower edge is parallel with the female dies underneath.

It is obvious that many changes in details and substitution of mechanical equipments may be made without departing from the spirit of my invention, or in any way altering the character thereof.

Having described my invention, I claim:

1. A scoring or creasing machine provided with a scoring blade and holding means therefor, the holding means being pivotally supported at one point and yieldingly supported at another point and means for feeding the material, and means for intermittently advancing the scoring blade toward the material, said feeding means being inoperative when the scoring blade is in contact with the material.

2. In a machine of the character described, the combination of feeding device comprising a belt and a cooperating pressure roller adapted to engage the material to frictionally feed it, means for continuously driving such feeding device, a creasing

blade extending parallel with the belt, and means for periodically pressing said blade into the material.

3. In a machine of the character described, a belt adapted to engage and feed material therethrough, pressure rolls arranged to work in conjunction with said belt, a creasing blade, and means for pressing said blade into the material.

10 4. In a machine of the character described, continuously driven means for frictionally and yieldingly feeding material therethrough, scoring means extending lengthwise of the direction of feed pivotally
15 movable about a fixed shaft, means for pressing the scoring means upon the material fed, and means for retracting the scoring means after the impression has been made.

20 5. In a machine of the character described, scoring means, mechanism for advancing the scoring means to and from the material and yielding frictional feed mechanism feeding the material in a single direction, said feeding means ceasing its feeding

25 action while the scoring means is in contact with the material and resuming feeding when such contact ceases.

6. In a machine of the character described, the combination of continuously driven frictional and yielding feeding
30 means, a scoring member extending lengthwise of the direction of feed, and means for causing said scoring member to intermittently impress the material.

7. In a machine of the character de- 35 scribed, the combination of a shaft, an arm journaled thereon, adjustable collars on the shaft for limiting the motion of said arm, a scoring blade carried by the arm, means for moving said arm about its pivot, and means 40 for feeding material in the same direction as the scoring blade extends.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

JOHN W. DENMEAD.

Witnesses:

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W. L. MCGARRELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Correction in Letters Patent No. 1,033,881.

It is hereby certified that in Letters Patent No. 1,033,881, granted July 30, 1912, upon the application of John W. Denmead, of Akron, Ohio, for an improvement in "Scoring-Machines," the name of the assignee was erroneously written and printed "The K. S. Box and Label Company" whereas said name should have been written and printed *The K. D. Box and Label Company*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of September, A. D., 1912.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.