

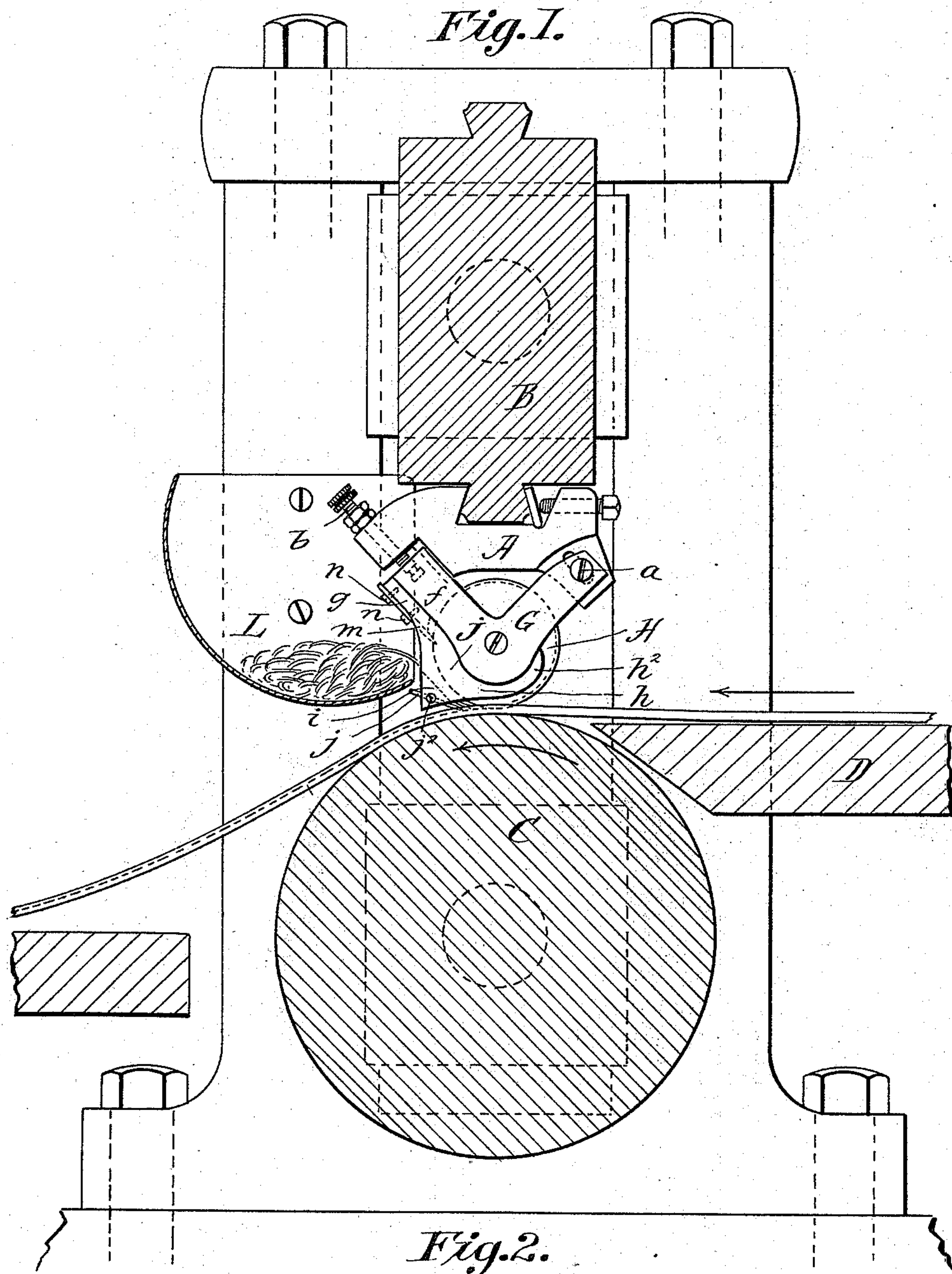
(No Model.)

2 Sheets—Sheet 1.

C. W. GAY.  
MACHINE FOR SCORING PAPER BOARD.

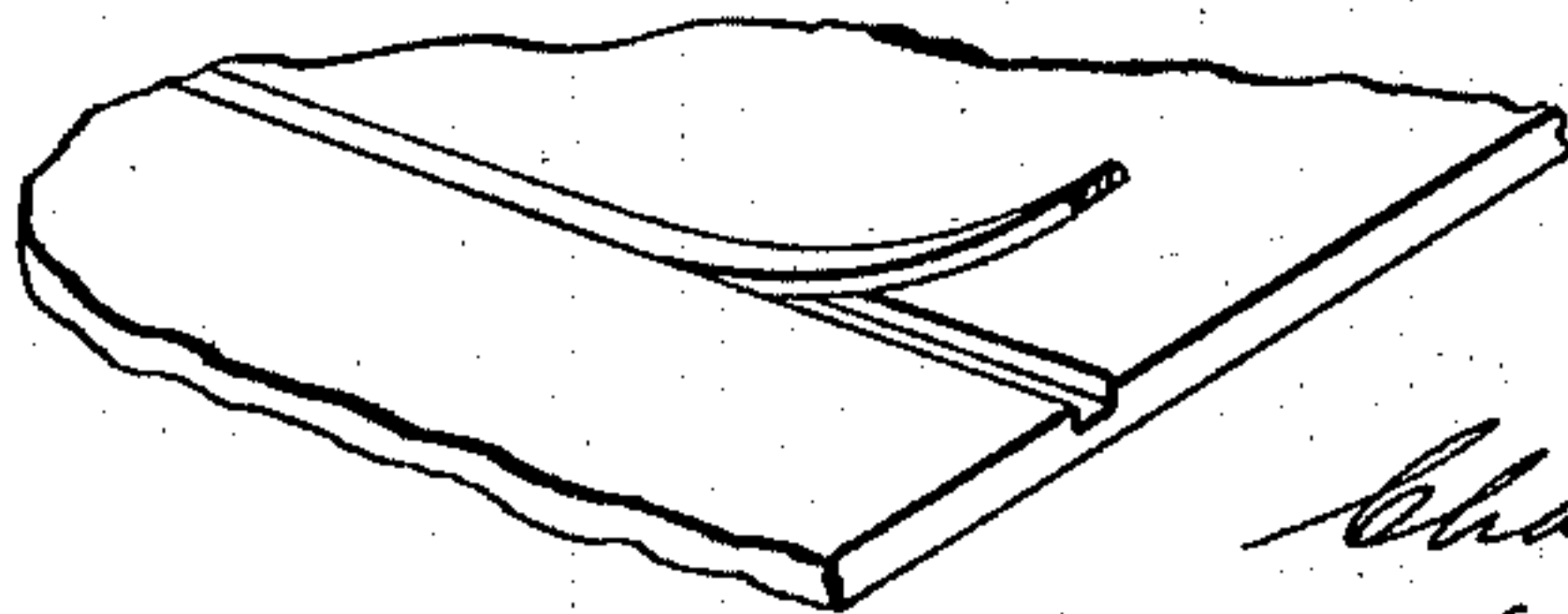
No. 527,963.

Patented Oct. 23, 1894.



Witnesses:

J. H. Garfield  
H. J. Clemons



Inventor  
Chauncey W. Gay,  
by Chapman & Co.  
Attys.

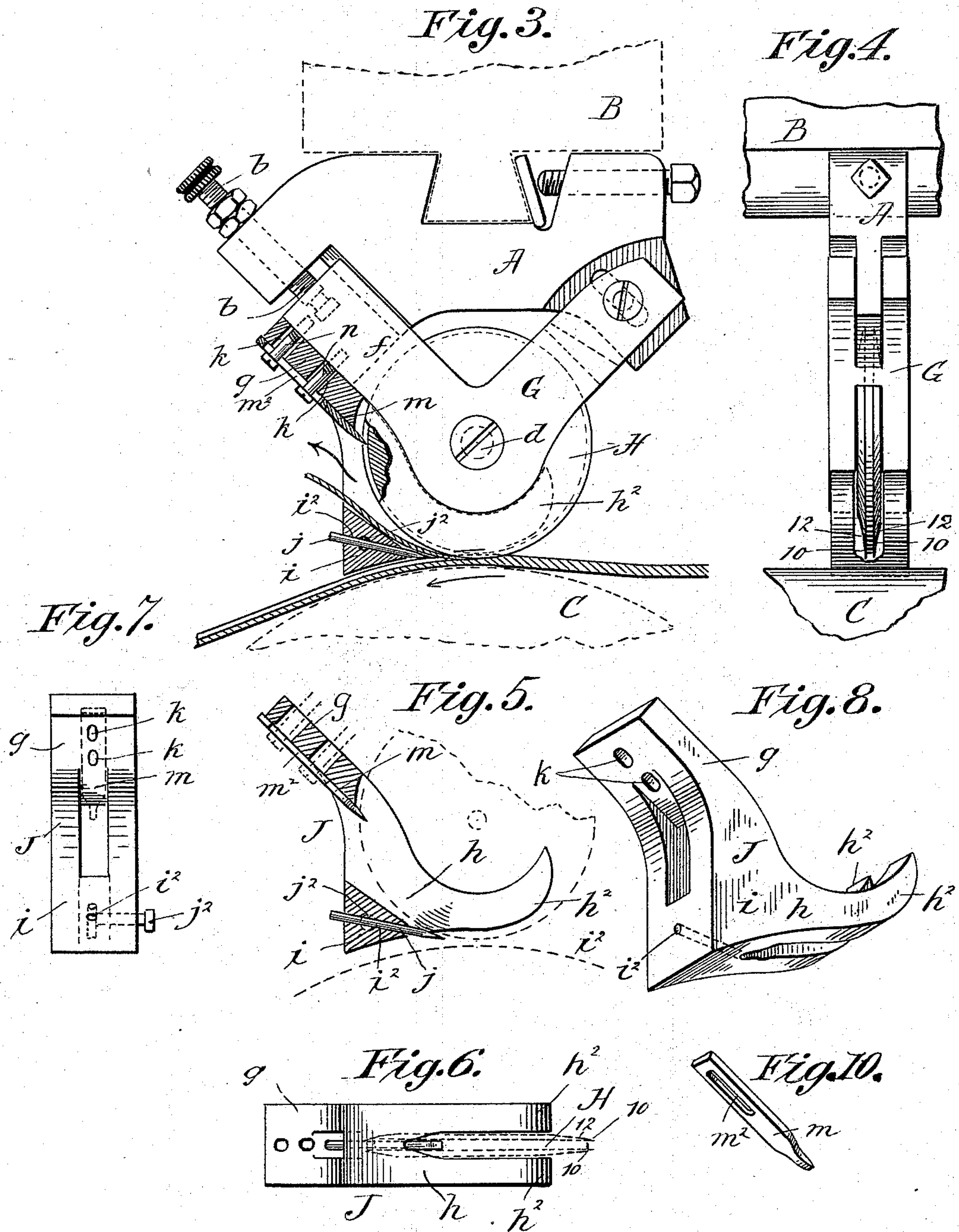
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Fig. 9.  
j

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# UNITED STATES PATENT OFFICE.

CHAUNCEY W. GAY, OF WEST SPRINGFIELD, MASSACHUSETTS.

## MACHINE FOR SCORING PAPER-BOARD.

SPECIFICATION forming part of Letters Patent No. 527,963, dated October 23, 1894.

Application filed March 15, 1894. Serial No. 503,715. (No model.)

*To all whom it may concern:*

Be it known that I, CHAUNCEY W. GAY, a citizen of the United States of America, residing at West Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Machines for Scoring Paper-Board, of which the following is a specification.

This invention relates to improvements in machines for scoring sheets of paper-board, or similar board from which paper boxes are made.

The object of the invention is to produce a mechanism by which the scorings may be produced with as great, or greater, rapidity than heretofore and one by which the stock may be excavated and cleared out of, and away from, the scoring groove with greater effectiveness and rapidity than heretofore.

Another object of the invention is to adapt the mechanism by simple means to be readily adjusted to accord with different thicknesses of paper and to produce scoring grooves of varying depths.

The invention consists in constructions and combinations of parts all substantially as will hereinafter fully appear and be set forth in the claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a scoring machine taken from front to rear and showing a sheet of paper-board being fed therethrough and acted upon by the scoring and clearing devices. Fig. 2 is a perspective view of a fragment of paper-board showing the same as scored and partially cleared. Fig. 3 is a view on a larger scale than Fig. 1 in vertical section through the improved devices. Fig. 4 is an elevation at right angles to Fig. 3, showing the said devices in edge view. Fig. 5 is a vertical sectional view of the shoe and clearer, its relative position to the scoring wheel being indicated. Fig. 6 is a plan view of the same. Fig. 7 is an edge view, and Fig. 8 a perspective view of the shoe. Fig. 9 is a perspective view of the clearing blade, and Fig. 10 is a perspective view of a secondary clearer or "doctor."

In the drawings, A represents the holder shown as removably and adjustably secured to the beam, B, of the scoring machine above

the support and guide-roll, C. The rail and roll are properly supported by the standard of the machine and the usual table, D, is provided. The holder has mounted thereon the hanger, G, which comprises two angular members, one of which has substantially a pivotal connection with the holder, as at *a*, and the other, by means of the screw shaft, *b*, has such a support from the hanger as to permit the adjustment of the hanger in slight extents toward and from the top side of the roll. The hanger carries, at the junction of its members, the journal screw, or stud, *d*, on which the scoring wheel, H, is axially carried.

The scoring wheel consists of a steel disk having two flanges, 10, 10, extended beyond the periphery and separated corresponding to the width of the required score line, the inner faces of which are parallel, while these flanges are outwardly beveled as at 12, so that they are made to constitute rotary scoring knives.

Upon the upwardly and forwardly extended member, *f*, of the hanger is secured the shoe, J. This important part is fully and clearly illustrated in several views of the drawings and consists of the upwardly and forwardly inclined stock, or shank-bar, *g*, with the bifurcated foot part, *h*, which is rearwardly extended and then upwardly rounded, as at *h*<sup>2</sup>, and which has the heel, *i*, which constitutes a tie piece for the two members of the foot. The bottom of the foot, comprising the heel, is curved to conform to the periphery of the roll, C, and the shoe is held by the screws, *n*, *n*, upon the hanger so that said curved bottom will stand above the top of roll, C, at a distance approximately corresponding to the thickness of the paper to be fed through between the foot and roll to be scored and excavated. By reason of the slots, *k*, *k*, in the shank-bar of the shoe, the latter may be adjusted toward and from the surface of the roll C. A hole, *i*<sup>2</sup>, is bored through the heel, *i*, for the reception of the rod, *j*, the inner edge of which (that protrudes within the aperture between the members of the bifurcated foot and extends below the adjacent bottom surface of the foot), is ground chisel-like to constitute an excavator, or clearer blade, the width of which is approximately the same as that between the inner faces of



the scoring flanges, 10, 10. The projection of the blade and of the clearer below the under surface of the shoe is approximately the same as the required depth of the scoring groove.

5 The clearer blade is held by the transversely applied set screw,  $j^2$ .

The above described shoe which has a considerable portion of its bottom of a contour corresponding to and yet slightly removed  
10 from, the periphery of the support and guide roller, C, serves to prevent the traveling stock from rising or being lifted above the top of said roll to consequently prevent a too deep, or uneven excavation between the parallel  
15 incisions made by the scoring wheel.

Upon the outer face of the shank-bar of the shoe is set the blade,  $m$ , with the narrowed and chisel edged extremity which enters the groove at the periphery of the scoring wheel,  
20 this part serving as a "doctor" for the scoring wheel to free the wheel from any cutting which may be retained within its channel edge. This doctor blade,  $m$ , has the slot,  $m^2$ , in its shank so that it is adjustable toward  
25 and from the periphery of the scoring wheel, and it moreover may be held by the heads of the same screws,  $n, n$ , which confine the shoe to the hanger.

It will be here explained that by reason  
30 of the parallel faced circular scoring blade flanges on the wheel, H, such scoring wheel will not only score the stock in close parallel lines, but will carry out the waste strip on occasions when certain kinds of paper-board  
35 are worked upon, and then it becomes the function of the doctor-blade,  $m$ , to clear the scoring wheel. In some stock having a more tenacious fiber, the wheel may not be de-  
40 pended upon to carry up the waste strip or shaving and then the clearer blade does it. The clearer blade insures, in any event, the excavation between the scores, uniformly, to the proper depth.

It will be noticed that the aperture creat-  
45 ing the separation between the members of the foot so extends as to leave an opening at the front of the shoe between the non-apertured shank-bar and the heel, whereby the waste cleared by either of the blades,  $j$ , or  $m$ ,  
50 may issue forwardly and be received into the rearwardly opening receptacle L which has a concaved bottom and front. By this means none of the cleared strips or particles will be permitted to fall back upon the board, or into  
55 the grooves thereof to be found objectionable later in the process of utilizing blanks of the paper-board for making boxes by hand or machinery, or for other purpose.

Having thus described my invention, what  
60 I claim, and desire to secure by Letters Patent, is—

1. In a scoring machine, the combination with the double-edged scoring wheel, of a shoe supported in proximity thereto, to bear  
65 upon the paper substantially as described, and having its foot bifurcated so as to lie at

either side of the scoring wheel and having the heel,  $i$ , transversely uniting the bifurcated members of the foot and having the socket,  $i^2$ , and the clearer-blade,  $j$ , set in and  
70 extended from said socket angularly to the under surface of the foot, substantially as described.

2. In a scoring machine, the combination with a shoe, substantially as described hav-  
75 ing the upwardly extended bar-shank,  $g$ , the foot which is bifurcated forming the two members with the curved under surface and the rearwardly upturned toes,  $h^2, h^2$ , and the transverse uniting heel,  $i$ , substantially as  
80 described and shown.

3. In a scoring machine, the combination with a hanger, G, and double-edged scoring wheel mounted thereon, of the shoe, J, hav-  
85 ing the bar-shank,  $g$ , provided with the slots,  $k, k$ , and having the bifurcated foot substantially as described, and the doctor-blade,  $m$ , having the slot in its shank,  $m^2$ , and the screws,  $n, n$ , for adjustably holding the shoe to the hanger, and the doctor-blade to the  
90 shoe, substantially as described.

4. In a scoring machine, the combination with the double-edged scoring wheel, of a shoe mounted near, and in advance of, the  
95 wheel and formed with an aperture there-through from front to rear, one or more clearers supported within this aperture for clearing and directing the waste stock which is excavated from the scored board forwardly  
100 through the throat formed by said aperture in the shoe, and a receptacle in advance of the wheel and clearer for receiving such waste, substantially as described.

5. In a scoring machine, the combination with the roll, C, and the scoring wheel, of a  
105 shoe above the support roll adjustably mounted independently of the scoring wheel, and having portions which are adapted to lie closely to the paper-board, and a clearer-blade supported by the shoe and having its  
110 working edge extended below the lower surface of the shoe, and arranged in advance, and in a plane parallel with the rotation, of the scoring wheel and between the circular knife edges thereof, substantially as de-  
115 scribed.

6. In a scoring machine, the combination with a supporting and guiding roll, C, the double-edged scoring wheel, and a hanger on which said wheel is adjustably mounted, of  
120 a shoe adjustably supported on the hanger independently of the wheel to be moved from and toward the roll, C, and having foot portions which are adapted to lie closely to the paper-board and having the clearer blade,  $j$ ,  
125 adjustably supported thereon and the doctor-blade,  $m$ , which is adjustable longitudinally of its length, substantially as described.

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Witnesses:

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