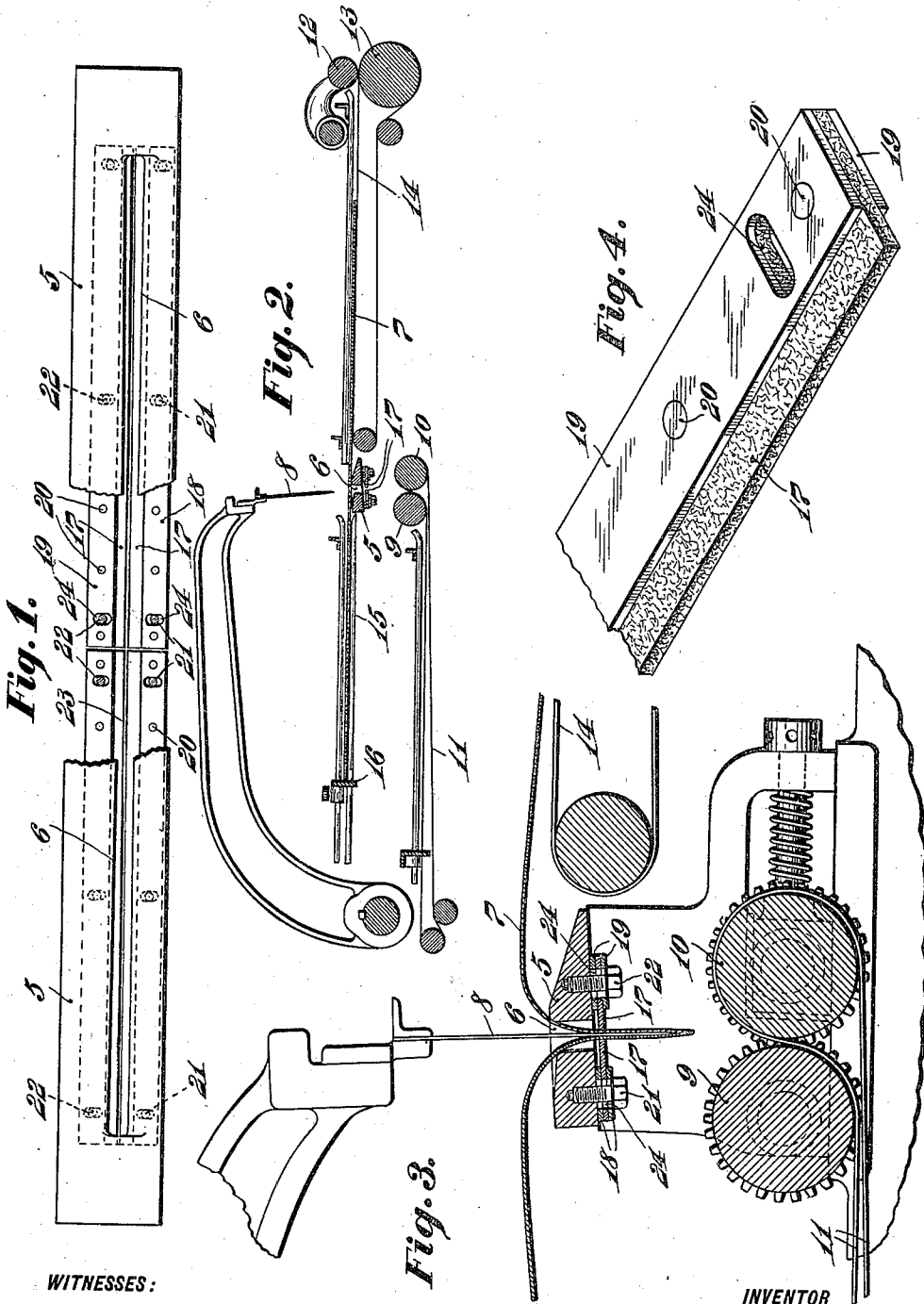


H. K. KING.
FOLDING MACHINE.
APPLICATION FILED DEC. 20, 1906.

948,547.

Patented Feb. 8, 1910.



WITNESSES:

Mae Hofmann
Jas. C. Wolensmith

Fig. 3.

INVENTOR
Howard K. King
BY
J. H. Coasdale
ATTORNEY.

UNITED STATES PATENT OFFICE.

HOWARD K. KING, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO CHAMBERS BROTHERS COMPANY, A CORPORATION OF PENNSYLVANIA.

FOLDING-MACHINE.

948,547.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed December 20, 1906. Serial No. 348,688.

To all whom it may concern:

Be it known that I, HOWARD K. KING, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Folding-Machine, of which the following is a specification.

My invention relates to improvements in folding machines.

The object of my invention is to provide means for securing an accurate fold of the sheet between the first pair of rollers.

In operating upon very thin paper, by the present form of rapidly operating folding machines, it has been found extremely difficult to secure accuracy in the first fold of the sheet, that is, the fold of the sheet between the first pair of rollers. This is because the knife, in pressing the sheet of thin paper through the slit of ordinary dimensions does not cause a sharp fold or crease in the sheet, but rather sends the sheet through the slit in the form of a loop. From this it results that the actual creasing of the sheet must be caused by the rollers, and the location of this crease by the rollers, is irregular and uncertain, due to the preponderance of friction which one or the other of the pair of rollers may exert on the sheet. This difficulty is not ordinarily experienced with the heavier grades of paper, since the blade, in forcing the sheet through the slit, causes the formation of a positive crease in the sheet, due to the pressure necessary to force the same through the slit, so that the operation of the first pair of rollers is simply to complete the folding on the crease already formed by the knife, and the operation upon heavy sheets is therefore substantially uniform. Since however, on the thinner sheets there is no such positive creasing of the sheet by the folding blade, as it presses the sheet through the vertical slit, the creasing which must be done by the first pair of rollers is liable to be irregular in position and thus form uneven folding.

My invention comprises means for overcoming this difficulty, and thereby securing a uniform fold by causing the blade to form a positive crease in the thin sheets as it does in the sheets of heavier paper.

Referring to the drawings:—Figure 1 is a plan view of my slit mechanism with parts broken away to show construction.

Fig. 2 is a transverse sectional elevation of same with associated mechanism. Fig. 3 is a similar sectional elevation of the slit and associated mechanism on an enlarged scale. Fig. 4 is a perspective of a portion of felt strip and its clamping bars, on a still larger scale.

Similar numerals refer to similar parts throughout the several views.

My improvement is applicable to folding machines well known in the art, of the general type such for instance as described in United States patents to me No. 667,021 and No. 667,022 dated Jan. 29, 1901. In these machines the general arrangement of striking blade, slit member and folding rollers is so well known in the art as to need no extensive description here.

Referring to the drawings in this application, the slit member 5 is of the usual form and is provided with the slit 6 extending longitudinally therein. The sheet 7 is adapted to be struck by blade 8 and carried down through the slit 6 to the rollers 9 and 10 between which it passes with its first fold and is carried off on tapes 11. It will of course be understood that the sheet is brought into position on slit member 5 by being fed through the drop roller 12 and feed roller 13 onto the tapes 14 by which it is carried over the slit member 5 and guides 15 against the stop 16, in the position as shown in Fig. 2.

As above stated, where an ordinary or moderately heavy grade of paper is used the striking of the sheet through slit 6 of member 5 is sufficient to give it a positive crease and to insure a uniform fold through rollers 9 and 10, but where the sheets are of unusual thinness, and the operation of the folding machine is rapid, the striking of the sheet through the slit 6 does not cause a crease thereof but simply bends it, so that it is really creased by the rollers 9 and 10, in an irregular or non-uniform way as above described. I have overcome this difficulty, and secured the creasing of the sheet directly by the striking blade 8, operating on the thinnest sheet of paper used by the following means. I have secured strips 17 of felt or other resilient or yielding material between opposite pairs of bars or metallic strips 18 and 19 respectively, so as to leave a projecting edge of said resilient material 17 along one side of each of the pairs of bars or strips 18 and 19. The said pairs of clamp bars or

strips 18 and 19 are secured together by rivets 20 or by any other suitable means. The structures thus formed by said pairs of bars 18 and 19 and the intermediate felt strips 17 having projecting edges, are then secured to the underside of the slit member 5 by the bolts 21 and 22. These pairs of clamp bars 18 and 19 are so positioned relatively that the projecting edges of the felt strips 17 will approach each other near the center of slit 6, thus forming an extremely narrow supplemental slit 23 beneath the wider slit 6 in member 5. If the margin of this slit 23 were rigid it is obvious that the knife in striking the paper against the same would almost invariably fail to carry the paper downwardly through this narrow slit, but would simply sever the sheet in two. The forming therefore of this slit 23 by the resilient or yielding strips 17, enables said strips to give slightly to the blade and sheet, to permit the sheet to pass between said strips. It will be obvious that in place of the margins for this attenuated slit being formed of yielding material, they might be formed, with equal efficiency, of non-yielding material but movably or yieldingly supported, without departing from the spirit of my invention. These yielding or resilient strips 17, then pressing against the sheet on either side of blade 8, serve to retard the sheet and thereby secure the positive creasing of the sheet along the edge of the blade.

The apertures 24 in clamping strips 18 and 19 are made oblong and of greater dimension than the bolts 21 and 22, to permit of adjustment of said pairs of clamping blades to move the opposing strips 17 toward and away from each other to suit the requirements of any particular case, or to take up the wear of the yielding strips.

What I claim is:—

1. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure comprising flat strips having adjacent, and nearly abutting edges of material capable of yielding in any direction.

2. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure having margins

of material capable of yielding independently at different points.

3. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure having margins of felt or similar material.

4. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure having margins of flexible fibrous material.

5. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure comprising flat strips of yielding material and relatively disposed, so that the edges of said strips shall form slit margins to exert an equal action on each side of the blade.

6. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure having margins formed by adjacent flat strips of yielding material adapted to lie normally in planes approximately transverse the travel of the blade.

7. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure comprising flat strips of yielding material lying in a substantially horizontal plane, the adjacent edges thereof forming the margin of the slit.

8. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure having margins formed by horizontally disposed, and adjustably supported flat strips of yielding material.

9. In a folding machine, the combination of a folding blade and cooperating slit structure, said slit structure having margins formed by adjacent flat strips of yielding material adapted to lie normally in planes approximately transverse the travel of the blade, and means for adjustably supporting said strips of yielding material, substantially as and for the purpose specified.

HOWARD K. KING.

Witnesses:

HOWARD S. OKIE,
MAE HOFMANN.