

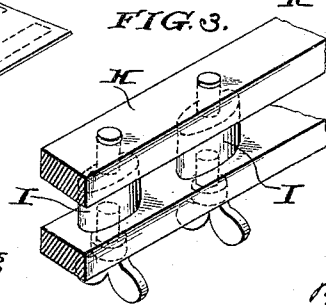
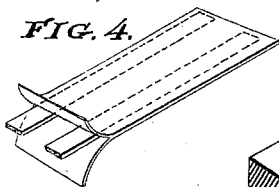
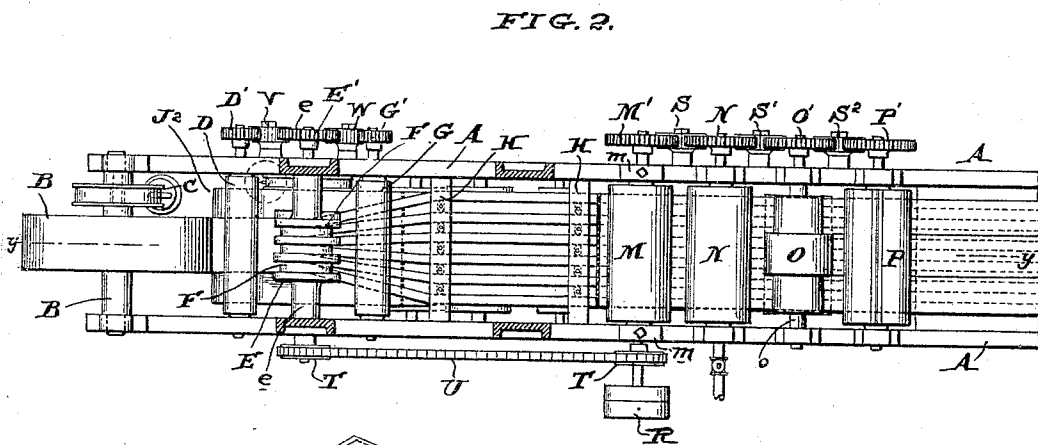
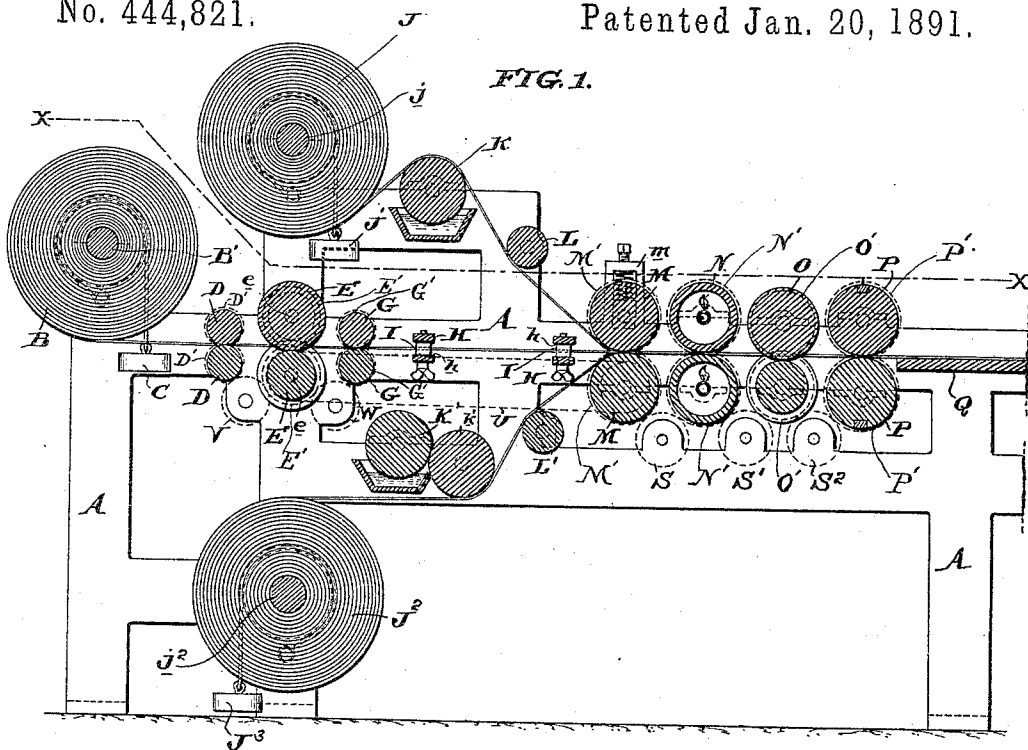
(No Model.)

H. P. FEISTER.

APPARATUS FOR MAKING LEAF HINGES FOR BOOKS.

No. 444,821.

Patented Jan. 20, 1891.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY P. FEISTER, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR MAKING LEAF-HINGES FOR BOOKS.

SPECIFICATION forming part of Letters Patent No. 444,821, dated January 20, 1891.

Application filed December 4, 1889. Serial No. 332,563. (No model.)

To all whom it may concern:

Be it known that I, HENRY P. FEISTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Apparatus for Making Leaf-Hinges for Books, &c., of which the following is a specification.

My invention relates to apparatus for making leaf-hinges for books, &c.; and it consists in certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

There has been devised a method of book-binding in which the leaves or book-sections are secured to hinge-pieces, which are attached together to form the back of the book. These hinge-pieces are constructed of two or more longitudinal ribs or strips inclosed between pieces of textile material, so as to form flexible hinge-pieces for attachment of the leaves of the book. Such hinge-pieces or guards are illustrated in Letters Patent No. 256,022, April 4, 1882, and No. 281,101, July 10, 1883. Heretofore these hinge pieces or strips have been made by hand, which is both tedious and expensive, and it is the object of my invention to accomplish the manufacture of these devices rapidly and economically for commercial purposes by machinery.

In carrying out my invention I feed the longitudinal ribs or strips and the textile material from separate rolls, and by means of suitable pasting devices I paste them together. I prefer to construct the material in a continuous sheet or web, and by means of suitable cutting devices to cut it longitudinally and transversely into the proper sizes for use.

The longitudinal strips or ribs are preferably made of Manila paper fed in a web from a continuous roll, then split longitudinally by suitable cutters, and having these longitudinal strips separated or divided from one another and fed between the pieces of textile material, to the inner faces of which paste has previously been applied. These pieces of textile material are similarly fed from continuous rolls, and by means of feeding and pressure rollers have their pasted faces pressed against the longitudinal strips, and this material is then fed between drying-roll-

ers for drying the paste, and thence to the cutters for cutting it into the desired sizes.

In the drawings, Figure 1 is a sectional side elevation of my apparatus for forming leaf-hinges for book-binding. Fig. 2 is a sectional plan view of the same on the line x of Fig. 1. Fig. 3 is a perspective view, on an enlarged scale, of the devices for dividing or separating the longitudinal filling-strips; and Fig. 4 is a perspective view of a piece of the finished leaf-hinge material.

A is the main frame of the machine.

B is the roll or supply of material for forming the intermediate longitudinal strips, preferably Manila paper, carried in a continuous roll upon a suitable supporting-shaft B', journaled in the main frame A and provided with suitable tension devices C to keep the paper taut.

D D are suitable feeding-rollers, between which the paper B is fed from the roll to the cutters E E. These feeding-rollers D D are journaled in the main frame A and are geared together by suitable gearing D' D'.

E E are a number of circular cutters carried upon shafts $e e$, adjacent to the feeding-rollers D D. These cutters E E on each shaft are separated from each other by intermediately-arranged washers F F, and are arranged so that the cutters upon one shaft project slightly between the cutters on the other shaft. The shafts $e e$ are journaled in the frame A and are geared together by suitable gearing E' E'.

G G are a pair of feeding-rollers arranged immediately in front of the cutters E E and geared together by suitable gearing G' G'.

H H are two transverse frames arranged a slight distance apart and each having a transverse opening h , through which the paper B, split longitudinally by the cutters E E, may pass. Supported by these transverse frames H H are a series of keys I, separated a short distance from each other for the purpose of separating the longitudinal strips of the paper B from one another. The two sets of keys I are arranged parallel to each other, so that the strips of paper passing between these two sets of keys are separated and kept parallel. I prefer to construct these keys oblong, as shown, and to support them in the frames H H with freedom of being turned, so that by

varying the angle of these keys the distance between the adjacent strips of paper may be varied and adjusted according to desire.

J is a supply or roll of muslin or other suitable textile material supported upon a shaft j , journaled in the frame A above the paper roll B and provided with suitable tension devices J'.

K is a pasting-roller for supplying paste to inner surface of the muslin or textile material.

J² is a second supply or roll of textile material supported upon a shaft j^2 below the paper roll B and similarly provided with a tension device J³.

K' are pasting-rollers for supplying paste to the upper or inner surface of the muslin or textile material from this second roll.

L L' are respectively guide-rollers to guide the textile material from the upper and lower rolls to the feeding and pressure rollers M M, between which the separated longitudinal paper strips are also fed intermediate the pieces of textile material, the pasted faces of which are pressed against the paperstrips by the pressure of these rollers M. I prefer to employ rubber-coated rollers for this purpose and to support the upper of these two rollers in suitable spring-bearings m . The shafts of these rollers journaled in the frame A are geared together by suitable gearing M' M'. The feeding of the muslin from the rolls J² and J is performed by these rollers M M.

N N are heating-rollers, to which heat is supplied in any convenient and well-known manner. These rollers have their shafts journaled in the frame A and are geared together by suitable gearing N' N'. The material is fed between these hot rollers for the purpose of drying the paste.

O O are circular cutters between which the material is fed and cut into longitudinal strips of the desired breadth. These cutters may be arranged similar to the cutters E E, and by varying the size of the intermediate washers between the adjacent cutters the width of the strips into which the material is cut may be adjusted. These cutters O O are carried by suitable shafts $o o$, which are geared together by suitable gearing O' O'.

P P are transverse cutting-rollers by which the strips of material formed by the cutters O O are cut transversely into proper lengths.

P' P' are suitable gear-wheels upon the shafts of the cutting-rollers P P.

Q is a supporting-table for the book-leaf hinges delivered from the cutters P P.

R is the main driving-wheel, which is preferably carried by the shaft of one of the rollers M, whence motion is imparted to the entire machine.

S, S', and S² are intermediate gears between the feeding-rollers M M, the heating-rollers N N, the transverse cutters P P, and the longitudinal cutters O O.

T is a sprocket-wheel carried by the shaft of one of the rollers M, and T' is a sprocket-

wheel upon one of the shafts e , and motion is transmitted from one to the other by means of a chain U.

V and W are intermediate gears between one of the gear-wheels E' and one of the gear-wheels D' and G', respectively.

The operation of the apparatus will be clearly understood from the foregoing description. The paper from the roll B is fed by the rollers D D to the cutters E E, where it is split longitudinally. Thence it is fed by the rollers G G to the dividing-keys I I, by which the strips are separated. These separated longitudinal strips are then conducted by the feeding-rollers M M between the pieces of muslin or textile material from the rollers J and J², the pasted faces of which are pressed by these rollers against the longitudinal paper strips. The material thus formed is then conducted between the drying-rollers and cut into strips and lengths in the manner described. If desired, one of the outer pieces of continuous material may be omitted and the book-hinge may be made up of a single piece of textile or other material and the longitudinal strips.

While I prefer to construct this material in a large sheet or roll for the purpose of rapidity and economy, it is apparent that a single strip of exactly the width desired may be made. The width of the textile material on the rolls J and J² must obviously be wider than the material or Manila paper of the roll B by reason of the separation of the longitudinal strips of the latter in the manner heretofore described.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of two separate supplies of textile or other material, a third supply of material, feeding devices, substantially as described, to feed said materials with their faces in contact with each other, the material from said third supply being intermediate between the other two materials, and pasting devices, substantially as described, to paste the faces of said materials together, and cutters to cut said third material into longitudinal strips before reaching said feeding devices.

2. The combination of two separate supplies of textile or other material, a third supply of material, feeding devices, substantially as described, to feed said materials with their faces in contact with each other, the material from said third supply being intermediate between the other two materials, and pasting devices, substantially as described, to paste the faces of said materials together, and cutters to cut said third material into longitudinal strips, and guides to guide said longitudinal strips and separate them from each other before reaching said feeding devices.

3. The combination of two separate supplies of textile or other material, a third supply of material with their faces in contact with each other, the material from said third

supply being intermediate between the other two materials, and pasting devices, substantially as described, to paste the faces of said materials together, and cutters to cut said third material into longitudinal strips, and two sets of guides to guide said longitudinal strips and separate them from each other and guide them parallel to each other to said feeding devices.

4. The combination of feeding-rollers to feed a number of longitudinal strips of material in contact with the pasted face of a second piece of material, with guides for separating said strips one from another and guiding them to the feeding-rollers.

5. The combination of feeding-rollers to feed a number of longitudinal strips of material in contact with the pasted face of a second piece of material, with adjustable guides for separating said strips one from another and guiding them to the feeding-rollers, whereby the distances between the adjacent strips may be adjusted.

6. The combination of a support for a quantity of material, cutters to cut said material into longitudinal strips, feeding-rollers to feed said material to the cutters, a second pair of feeding-rollers to feed the material from the cutters, and feeding and pressure rollers to feed said strips in contact with the pasted

face of a continuous piece of material to form a web of book-hinge material.

7. The combination of a support for a quantity of material, cutters to cut said material into longitudinal strips, feeding-rollers to feed said material to the cutters, guides to separate said longitudinal strips and guide them from said cutters, and feeding and pressure rollers to feed said strips in contact with the pasted face of a continuous piece of material to form a web of book-hinge material.

8. The combination, with a support for a roll of material, of feeding devices, substantially as described, to feed the material from said roll in a continuous web, a support for a second supply of material, and feeding devices, substantially as described, to feed the material therefrom, pasting devices, substantially as described, to apply paste to the face of one of said materials, pressure-rollers to press said materials with the pasted faces in contact, and cutters to cut one of said materials into longitudinal strips before it is fed to the pressure-rollers.

In testimony of which invention I have hereunto set my hand.

HENRY P. FEISTER.

Witnesses:

ERNEST HOWARD HUNTER,
A. J. DUNN.