No. 763,159. PATENTED JUNE 21, 1904.

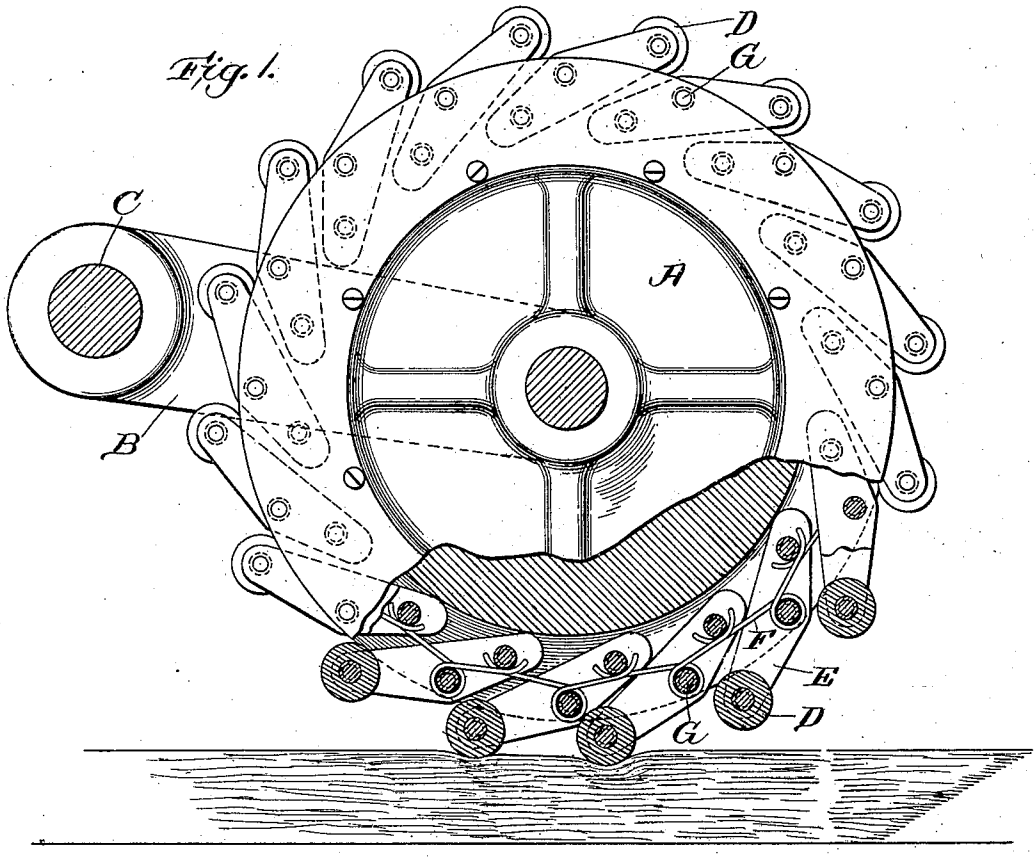
F. L. CROSS.

COMBING WHEEL.

APPLICATION FILED NOV. 21, 1901.

NO MODEL.

Fig. 1.



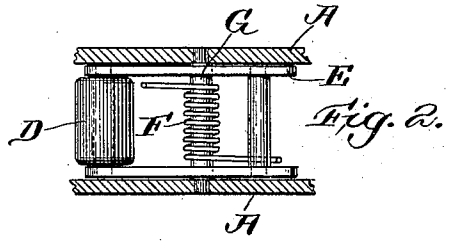


Fig. 2.

Witnesses:

Katharine A. Logan

Geo. N. Goddard

Inventor:

Frank L. Cross

by

Ira L. Fish

Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 763,159. Patented June 21, 1904.

UNITED STATES PATENT OFFICE.

FRANK L. CROSS, OF MYSTIC, CONNECTICUT, ASSIGNOR TO AMERICAN PAPER FEEDER COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

COMBING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 763,159, dated June 21, 1904.

Application filed November 21, 1901. Serial No. 83,091. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. CROSS, of Mystic, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Combing-Wheels, of which the following is a specification.

The invention relates to combing-wheels such as are used in paper-feeding machines to comb or feather out the top sheets of a pile, advancing the top sheet to a greater extent than those beneath it, so that it may be seized and separated from the pile, and relates more especially to that class of combing-wheels in in which the combing-surface consists of small rolls arranged about the periphery of the wheel, so that they will act to form successive and progressing depressions in the pile of sheets. Heretofore the rolls in such combing-wheels have been mounted upon pins fixed about the periphery of the wheel, and the wheel has usually been held against the pile of sheets during the combing by the weight of the wheel and supporting parts or by such weight assisted by a spring. With this construction as the successive rolls are brought into engagement with and carried along the pile they throw the wheel upward. This causes the wheel to bound away from the pile and to strike a succession of blows thereon as it moves up and down, thus impairing the combing efficiency of the wheel and under some conditions resulting in an improper separation of the parts of the pile. This is one of the chief objections to these combing-wheels, which becomes a serious objection in operating upon some kinds of paper and under some conditions of the pile. With the present invention this objection is eliminated, and a uniform and effective combing action is assured under the varying conditions as to quality and thickness of paper and character of the pile of sheets met with in actual service. This is accomplished by so mounting the rolls about the periphery of the wheel that they may yield as they are carried against and along the pile of sheets and holding the rolls up to their work by springs. With this construction each roll is forced against the pile with an even pressure as it travels along the pile, thus insuring an efficient combing action.

The invention will be made more clear by referring to a combing-wheel embodying the invention, and in the accompanying drawings I have shown a wheel of simple and efficient construction made in accordance with the invention.

In the drawings, Figure 1 is a side elevation of the combing-wheel, and Fig. 2 is a detail of a roll-carrying frame.

In the drawings, A represents th combing-wheel, which is mounted to rotate in an arm B, carried by the shaft C in any usual manner. The combing-surface of the wheel consists of a series of rolls D, arranged about the periphery of the wheel. As the wheel A is rapidly revolved the rolls D are brought in rapid succession against and carried along the top of the pile of sheets. Each roll forms a depression in the pile, and as the roll rolls along the top of the pile this depression travels forward toward the front edge of the sheets. Thus progressing depressions are formed in the pile in rapid succession, the effect of which is to comb out the top sheets of the pile, the advancing effect being greatest in the top sheet and decreasing with the depth of the sheet in the pile.

To produce an effective, rapid, and regular comb, each roll should bear upon the pile with an even pressure as it rolls over the top sheet. This is assured by mounting the rolls D so that they may yield and holding them up to their work by springs. In the construction shown the rolls are mounted in the rear ends of frames E, pivoted in an annular groove in the rim of the wheel A. A spiral spring F is mounted on the pivot G of each frame, and one end of the spring acts upon the forward end of that frame, while the other end acts upon the forward end of the next following frame. These springs hold the forward ends of the frames against the bottom of the groove in the wheel A, which forms a stop for limiting the outer position of the rolls D.

As the rolls D engage the pile the springs F yield to allow the rolls to travel along the

top sheet, and each roll is pressed evenly against the pile as it is brought against and carried along the pile. There is at all times during the combing at least one roll acting on the pile, and therefore at least one depression traveling along the pile, and the depressions follow each other in regular and rapid succession, thus insuring a regular and effective comb of the sheets.

The construction also adds to the efficiency of the combing action by causing each roll to bear effectively upon the pile during its entire travel against the top sheet.

What I claim, and desire to secure by Letters Patent, is—

1. A combing-wheel for sheet-feeding machines having a periphery consisting of a series of spring-pressed rolls substantially as described.

2. A combing-wheel for sheet-feeding machines having a series of circularly-arranged frames pivoted thereto, rolls carried by said frames and forming the periphery of the wheel and springs for holding the frames with the rolls in their outer position, substantially as described.

3. A combing-wheel for sheet-feeding machines supported by engagement with the sheets, and having a periphery consisting of a series of spring-pressed rolls so arranged that one at least is always in engagement with the sheets during the combing, and a carrier for said wheel, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK L. CROSS.

Witnesses:
IRA L. FISH,
KATHARINE A. DUGAN.