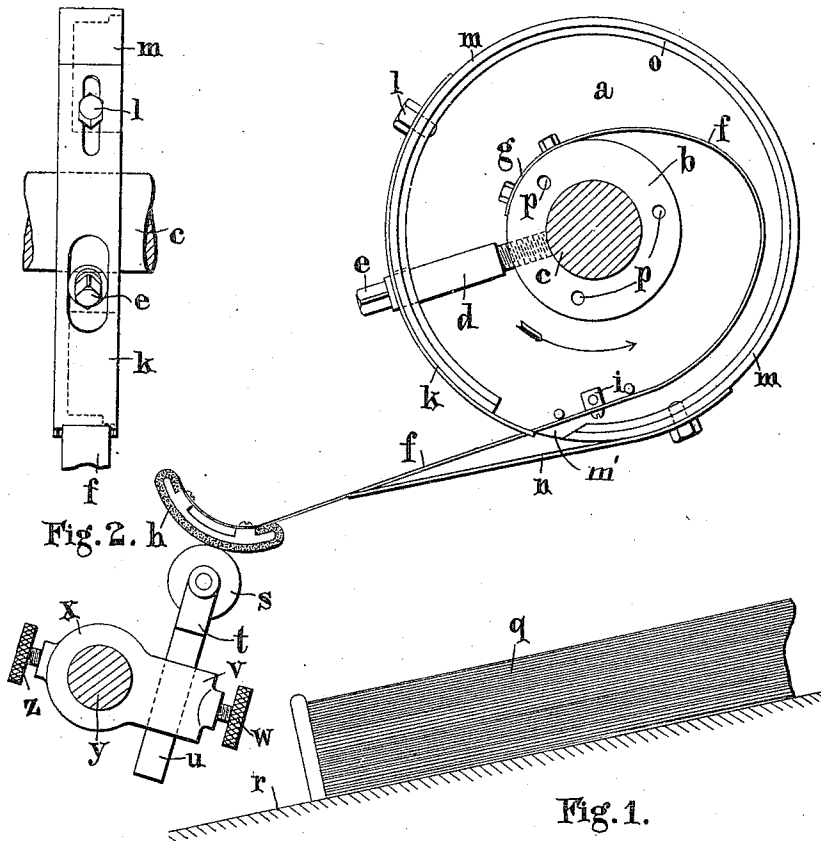


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PAPER FEEDING MECHANISM.

APPLICATION FILED JULY 25, 1908. RENEWED NOV. 12, 1910.

985,592.

Patented Feb. 28, 1911.



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PAPER-FEEDING MECHANISM.

985,592.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK EDWARD HODGKINSON, a subject of the King of Great Britain and Ireland, and residing at 3 Rosebery avenue, Clerkenwell, London, England, have invented certain new and useful Improvements in Paper-Feeding Mechanism, of which the following is a specification.

This invention relates to paper feeding mechanism for printing, folding or the like machines, and more particularly to the type of feeding mechanism comprising a spring arm or arms secured at one end to a shaft and provided at the other end with a frictional pad, so that when the shaft is rotated the pad is brought down on to the pile of paper sheets to be fed with more or less force and the sheets are fed forward one at a time. Mechanism of this type as hitherto constructed is apt to fail when run at high speed, and it is the object of this invention to provide a feeding device of the above nature which is very simple in construction and which may be effectively worked at a very high speed, the device also being adapted to be set or regulated to suit various types of paper.

According to the present invention each spring arm is made of spiral form. Means are provided whereby the tension of the spring arm may be initially set or regulated and its movements or vibrations limited. Additional means are also provided by which the frictional pad on the free end of each spring arm may be temporarily arrested in its revolutionary movement and then released, with the result that it is brought down sharply with a decided blow upon the top of the pile of sheets when certain classes of paper have to be fed.

In the accompanying drawings, Figure 1 is a side elevation illustrating one form of paper feeding device according to the invention, Fig. 2 being a rear elevation of a part thereof.

In the form of the invention illustrated in the drawings, a disk or plate, *a*, provided

with a boss, *b*, is mounted upon a shaft, *c*, which is arranged across the forward edge of the usual horizontal feeding board and table of the machine. The boss, *b*, is secured to the shaft, *c*, in any suitable manner for instance, by means of a set screw, *d*, the latter being preferably provided with a square head, *e*, in order to facilitate operation by a key so that the device may be quickly altered or adjusted upon the shaft, *c*, to suit the height of the pile of sheets or quality of the sheets to be fed forward at any time.

A spiral spring, *f*, has one end, *g*, secured to the boss, *b*, while the other end is fitted with a rubber pad, *h*, or any other suitable frictional device, intended to be brought into contact with the top sheet of the pile as the device is rotated in the direction indicated by the arrow. The spring, *f*, is preferably screwed to a small pin, *i*, pivoted in the plate, *a*. The spring may be slotted in order that it may be adjusted relatively to this pin and several holes may be provided in the plate, *a*, to receive the pin, *i*, to allow for further adjustment if desired.

In order to enable the tension of the spring to be initially adjusted a segmental plate, *k*, is adapted to be moved into contact with the spring and to press thereon with more or less force according to the position to which the plate, *k*, is set and secured by a set screw, *l*, which passes through a slot in the plate, *k*, and is screwed into a rim, *m*, formed upon the plate, *a*. The rim, *m*, is provided with a suitable aperture through which the set screw, *l*, can be passed and the slot provided for the set screw *l*, in the plate, *k*, can be prolonged to allow for the set screw, *l*, or another slot can be provided therefor.

A plate, *n*, is secured to the rim, *m*, and adapted to act as a stop for the spring, *f*, in order to deaden the vibration of the latter after it passes off the pile of sheets, as it is found that unless provision of this kind is made the spring is apt to vibrate violently each time that it leaves a pile of sheets.

Any other suitable device may be employed to deaden the vibrations, or in a simple form this device may be omitted. The rim, *m*, is provided with a slot *m'* for the passage of the spring *f* and is formed with a rabbet, *o* to receive a cover plate which can be secured by means of screws inserted in the holes, *p*, of the boss *b*, or in any other suitable manner.

10 When the shaft, *c*, is rotated, the pad, *h*, on the free end of the spring, *f*, is intermittently brought down on the top sheet of the pile *q* on the feeding board *r*, and during the continued rotation the pad is drawn
15 forward and this pressure on the pile is gradually increased so that the top sheet is brought forward or "stroked" into the machine.

With certain classes of paper it is sometimes necessary to increase the blow or striking of the pad *h*, upon the top of the pile of sheets, *q*. This is effected by interposing a roller *s*, in the path of the pad so that the latter strikes the roller and is temporarily retarded, being, however, very soon afterward released so that it strikes the paper pile *q*, with a decided blow. The effect or sharpness of this blow may be varied by adjusting the roller *s*, relatively to the path
20 of the pad, *h*; for instance the roller may be mounted in a fork *t*, having a rod *u*, passing through a lug, *v* in which it can be adjustably secured by a set screw *w*. The lug, *v* is formed integral with a boss *x*, fixed adjustably upon a shaft, *y* by a set screw *z*. By slackening the set screws *w* and *z* and adjusting the rod *u* in the lug, *v*, and in the boss, *x*, relatively to the shaft *w*, the position of the roller, *s*, relatively to the path of the pad *h*,
30 may be varied as desired.

It will be obvious that more than one stroking device of the above mentioned nature may be fitted upon the shaft *c*, and in some cases each device may comprise more
45 than one spring arm *f*, so that the speed of rotation of the shaft, *c*, may be decreased while still enabling rapid feeding to be effected.

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

1. In a paper feeding device of the type referred to, the combination of a rotary shaft, a spring arm of spiral form attached
55 at one end to said shaft, a frictional pad on the free end of said arm, and means adapted to be interposed in the path of said pad for engaging therewith and temporarily retarding the same and imparting additional tension to said spring arm.
60

2. In a paper feeding device of the type referred to, the combination of a rotary shaft, a spring arm of spiral form attached at one end to said shaft, a frictional pad on

the free end of said arm, means adapted to be
65 interposed in the path of said pad for engaging therewith and temporarily retarding the same and thereby imparting additional tension to the spring arm, and means
70 for adjusting the aforesaid retarding means relatively to the path of the pad, for the purpose hereinbefore set forth.

3. In a paper feeding device of the type referred to, the combination of a rotary shaft, a spring arm of spiral form attached
75 at one end to said shaft, a frictional pad on the free end of said arm, a roller adapted to be interposed in the path of said pad so as to engage therewith, and means for adjusting said roller relatively to said path, for
80 the purpose hereinbefore set forth.

4. In a paper feeding device of the type referred to, the combination of a rotary shaft, a spring arm of spiral form attached at one end to said shaft, a pad on the free
85 end of said arm, a roller adapted to be interposed in the path of the pad, a forked rod supporting said roller, a bored lug for receiving said rod, a set screw for securing the rod, a boss integral with the lug, a shaft
90 for supporting said boss, and a set screw for securing the boss thereon.

5. In a paper feeding device of the type referred to, the combination of a rotary shaft, a boss fixedly mounted thereon, a disk
95 connected with said boss, and having a rim provided with a slot, a spring arm of spiral form passing through said slot and having one end secured to the aforesaid boss, a frictional pad on the free end of the arm, a relatively
100 movable segmental plate on the rim and means for securing the same relatively to the spring arm, for the purpose hereinbefore set forth.

6. In a paper feeding device of the type
105 referred to, the combination of a rotary shaft, a disk having a plurality of holes, a central boss and a circumferential rim provided with a slot, a set screw extending through the rim and boss for securing the
110 latter to the rotary shaft, a spring arm of spiral form passing through the aforesaid slot in the rim and having one end secured to the said boss, and a pad on the free end, and a pin secured to the spring arm and
115 engaging one of the holes in the aforesaid disk, for the purpose hereinbefore set forth.

7. In a paper feeding device of the type referred to, the combination of a rotary shaft, a disk having a central boss and a
120 circumferential rim provided with a slot, a set screw extending through the rim and boss for securing the latter to the rotary shaft, a spring arm of spiral form passing through the aforesaid slot in the rim and
125 having one end secured to the said boss and a pad on the free end, a pin secured to the spring arm and adapted to be inserted in

any one of a plurality of holes in the aforesaid disk, a tangential plate mounted on the aforesaid rim, and adapted to act as stop for the spring arm, and a segmental plate also
5 mounted on the rim and adapted to be adjusted relatively to the spring arm, for the purpose hereinbefore set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK EDWARD HODGKINSON.

Witnesses:

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C. W. CHELL.

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