

F. F. FLAGG.
DIE FOR CUTTING PAPER.
APPLICATION FILED NOV. 18, 1910.

1,057,138.

Patented Mar. 25, 1913.

2 SHEETS—SHEET 1.

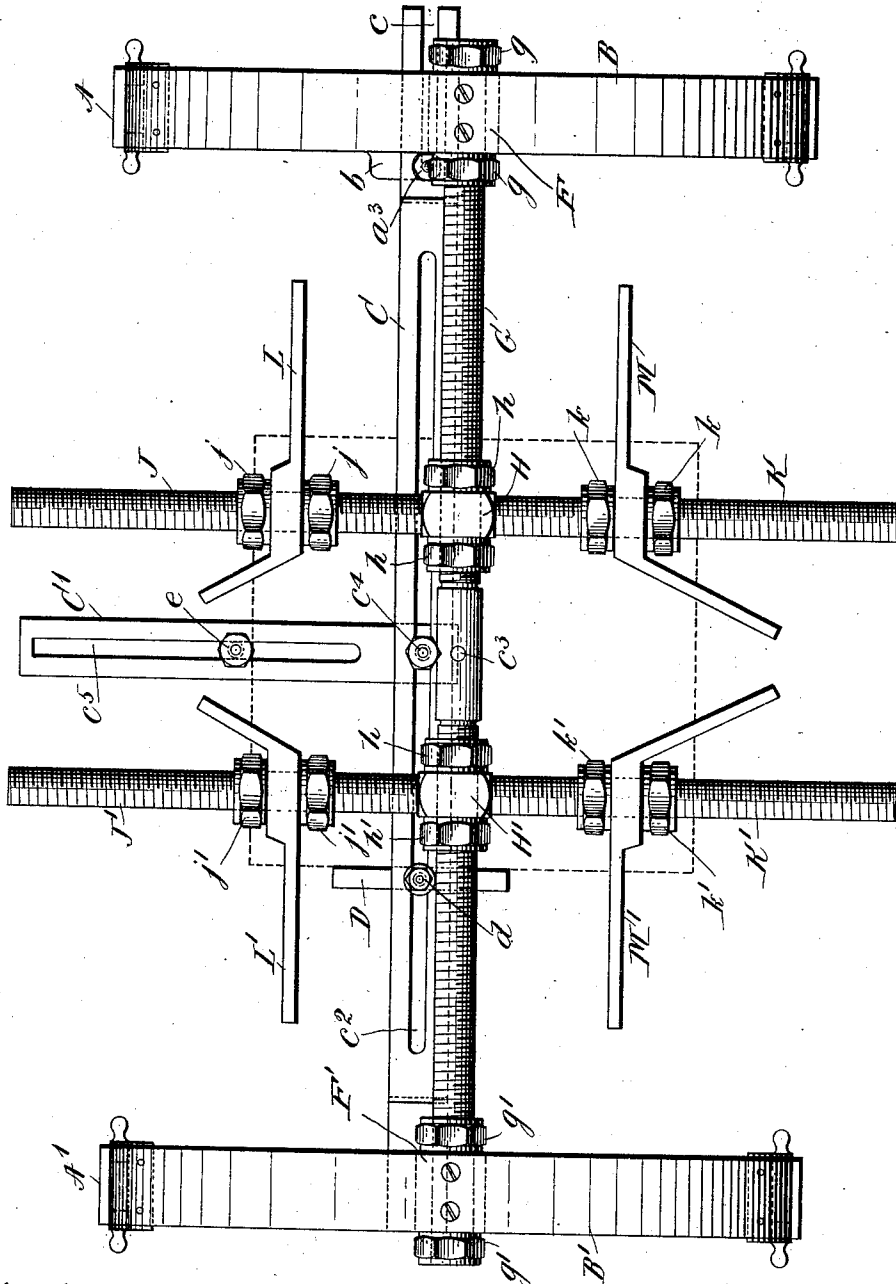


FIG. 1.

WITNESSES=

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George Langton.

INVENTOR=

Fred F. Flagg

By

Wm. F. F. Flagg

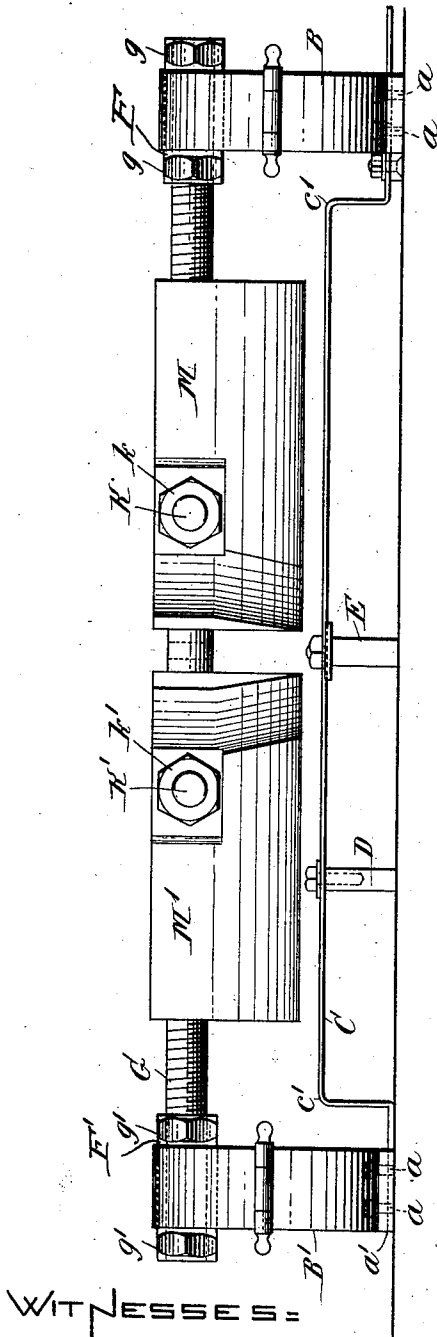
his attorney.

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2 SHEETS-SHEET 2.



WITNESSES=

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FIG. 2 -

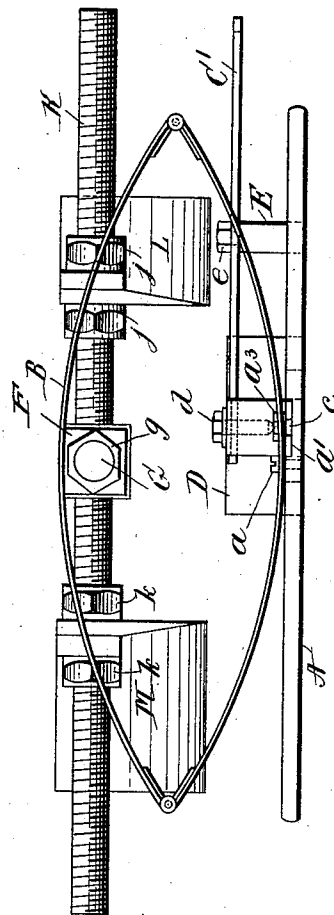


FIG. 3 -

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UNITED STATES PATENT OFFICE.

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DIE FOR CUTTING PAPER.

1,057,138.

Specification of Letters Patent.

Patented Mar. 25, 1913.

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To all whom it may concern:

Be it known that I, FRED F. FLAGG, of Worcester, in the county of Worcester and State of Massachusetts, a citizen of the United States, have invented an Improvement in Dies for Cutting Paper, of which the following is a specification.

My invention relates especially to dies for cutting envelop blanks from paper although it may be adapted for other purposes. In cutting envelop blanks of regular sizes it is usual to have dies of given and permanent shapes, one for each size of the blank to be cut. One of such dies is placed on top of a pile of blank paper and by means of a power press it is forced down through the paper, thus cutting a blank of the desired shape.

There are many calls in an envelop factory for envelops of a peculiar size and cut, and for this purpose an adjustable die is useful, but with such a die there is used what is known as a gage blank which is of exactly the size to which the blanks are to be cut. This gage blank is placed on top of the paper pile and the adjustable die is placed so that the knives conform so far as need be to the outline of the gage blank. This is done on the table under the power press which is then operated to force the blades through the paper. The die is then lifted and the cut blanks and waste removed, after which the gage blank is adjusted in the same way upon a new pile of paper, the adjustable die placed thereon and the operation repeated. As in the course of a day this operation wastes a good deal of time I have invented what may be termed an automatic adjustable die which is provided with gages and with a spring mechanism whereby when the power press releases the die it will rise automatically into its normal upper position clearing the blanks and allowing them and the waste to be removed and another paper pile to be put in their place against the gages and without the use of any gage blank, after which the operation is repeated.

My invention will be understood by reference to the drawings, in which—

Figure 1 is a plan, Fig. 2 a side elevation, and Fig. 3 an end elevation of an adjustable die embodying my invention.

A, A¹ are shoes which are adapted to rest upon the pressure table against the support

of which the power press operates. Upon each shoe there is mounted an elliptical spring B, B¹, of ordinary construction and of considerable strength, each spring being attached to its shoe by screws *a*. The spring B also is provided with a laterally projecting portion *b*.

Between the springs B and B¹ is a gage bar C. To receive and properly hold this gage bar I prefer to provide a recess *a*¹ in each shoe of the width of the gage bar and of approximately its thickness in depth. The gage bar is attached to the shoe A¹ by screws or rivets indicated at *a*². At its other end it is preferably provided with a slot *c* which slot receives a screw *a*³ which screws into the part *b* of the shoe A. This is a convenience merely in order to adjust the parts when the device is assembled. The gage bar C is U-shaped projecting upwardly from the level of the shoes A, A¹ and again at a right angle as at *c*¹ so that the main portion of the gage is substantially horizontal being approximately an inch or more above the level of the plane of the shoes. The gage bar is slotted longitudinally as at *c*² and from the slot depends a gage D adjustably attached to the gage bar by the screw *d* which passes through the slot *c*² and into the gage D. The gage C also carries at right angles thereto a slotted arm C¹ which is attached thereto by a pin *c*³ and the screw *c*⁴ which also passes through the slot *c*² in the gage bar C. The arm C¹ is slotted as at *c*⁵ and it carries a gage E attached to it by means of the screw *e* which passes through the slots *c*⁶. Thus it will be seen that the gage bar and shoes provide two gages D and E adjustable at right angles to each other so that the corner of a pile of paper may be thrust up into the space left between them as shown in Fig. 1, and so be gaged centrally in relation to the knife blades. These parts exclusive of the springs may for convenience be called the gage frame.

The die frame will now be described.

Each elliptical spring B, B¹ has a block F, F¹ permanently attached to the under side of its upper portion. Each block has a smooth opening through it and through that opening passes the threaded rod G. Nuts *g*, *g*, one on each side of the block F, prevent the rod from endwise motion with relation to it and in a similar manner nuts

g^1, g^1 , prevent the rod from endwise motion with relation to the block F^1 and spring B^1 . The rod G also carries blocks H, H^1 which have a smooth interior so that they may slide along the threaded portion of the rod G but each is held in fixed though adjustable relation with the rod G by means of nuts h, h, h^1, h^1 . Each block H, H^1 carries two rods J, K, J^1, K^1 , projecting therefrom and fixedly attached thereto. These rods are threaded and form carriers for the knife blades L, L^1 and M, M^1 . The blades L, L^1 are clamped upon the rods J, J^1 by means of nuts j, j^1 . In like manner the blades M, M^1 are adjustable upon the rods K, K^1 , by means of nuts k, k^1 between which they are clamped. Thus by means of the nuts h, h, h^1, h^1 , the blocks H, H^1 carrying their rods J, K , and J^1, K^1 may be moved laterally in either direction so as to bring the blades L, L^1 and M, M^1 into proper relation and in like manner the blades L, L^1 and M, M^1 may be separated from each other or brought closer together, as occasion may require, by reason of the nuts j, j^1, k, k^1 .

The operation of a die of this kind is easily understood. The shape of the blades will of course conform to the work to be done. The proper shaped blades having been chosen they are properly adjusted by means of the various nuts so as to bring them into proper relation with each other and thereafter the gages D and E are set with relation to the shape of the blank and the location of the blades, and thereafter a pile of paper of proper height to engage the gages D and E is slid under the die upon the table until two of its edges engage the dies D and E . The power press is then operated to engage the die frame and drive the blades through the paper against the force of the springs B, B^1 . As the power is released so that the press rises the springs B, B^1 expand, thus lifting the die frame and blades off the paper and allowing the blanks and the waste to be removed and a new pile of paper to be put into place. I have shown as the most convenient form of spring for this purpose an elliptical spring to which the die frame is attached but I do not mean to confine myself to springs of this character. Other means of accomplishing the same result will suggest themselves to those skilled in the art.

So far as I know no adjustable die having the various movements of this die has ever heretofore been constructed. Nor do I mean to confine myself to the exact construction of gage frame and arrangement of gages as herein shown and described, as other gages and arrangements of gages adapted for this purpose will suggest themselves according to the shape of the pile of paper to be cut.

My invention consists in the combination of a gage frame with a die frame and espe-

cially in supporting of the die frame on springs which will lift it when its work is done.

What I claim as my invention is:

1. In a device of the kind described, means for supporting blades, a plurality of blades adjustably mounted thereon, and means for supporting gages and a plurality of gages adjustably mounted thereon.

2. In a device of the kind described, means for supporting blades, a plurality of blades adjustably mounted thereon, means for supporting gages, a plurality of gages adjustably mounted thereon and means for supporting said blade-supporting means in yieldable relation with said gage-supporting means.

3. In a device of the kind described, a gage-supporting means, gages mounted thereon, a blade-supporting means, and a plurality of blades each adjustably mounted thereon, said blade-supporting means being movable vertically with relation to said gages.

4. The die above described, comprising a plurality of gages suitably supported and each adjustable with relation to the other in a horizontal plane, and a blade carrier movable in a vertical plane with relation to said gages.

5. In combination, blades adapted to be adjusted toward and from each other, and means for so adjusting them, and means for supporting them with a clearance below their edges, said means comprising a frame carrying adjustable gages located to determine the position of the material to be cut with relation to said blades, said support to said blades being mounted upon said frame and being adapted to yield under pressure and resume its normal position when said pressure is removed.

6. In combination, the gage bar, means for supporting it, said gage bar being slotted longitudinally, a gage adjustable in said slot, a slotted arm mounted on said gage bar also carrying a gage adjustable in said slotted arm, and blades, and means carrying said blades and mounted on said gage bar.

7. In combination, springs and a die frame mounted thereon and carrying cutting dies, said frame being adapted in the act of cutting to compress said springs.

8. In combination, a gage frame, springs mounted thereon, a die frame mounted on said springs and carrying cutting dies, said frame being adapted in the act of cutting to compress said springs.

9. In a cutting die, in combination, a gage frame carrying gages adapted to gage the position of the material to be cut in two directions, said gages being adjustable on said frame, said gage frame carrying springs, a die frame mounted on said springs and car-

rying a plurality of knives whereby said frame in the act of cutting will compress said springs and said springs will withdraw said knives from the material to be cut.

5 10. In a cutting die, in combination, a gage frame carrying gages adapted to gage the position of the material to be cut in two directions, said gages being adjustable on said frame, said gage frame carrying
10 springs, a die frame mounted on said springs and carrying a plurality of knives adjustable upon said frame according to the size and shape of the blank to be cut.

15 11. In a cutting die, in combination, a gage frame carrying a gage adjustable to

the end of the blank to be cut, and a second gage adjustable to the length of the said blank frame, said frame having a spring mounted at each end thereof, and a die frame comprising a rod, each end of which 20 is mounted on said springs, and a pair of cross rods each of which is mounted to be adjusted along said first named rod, said cross rods each carrying one or more knives adjustable along the length thereof.

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