No. 888,179. PATENTED MAY 19, 1908.

F. O. LAWRENCE.

FRICTIONALLY CONTROLLED FEEDING DEVICE.

APPLICATION FILED MAY 28, 1906.

2 SHEETS—SHEET 1.

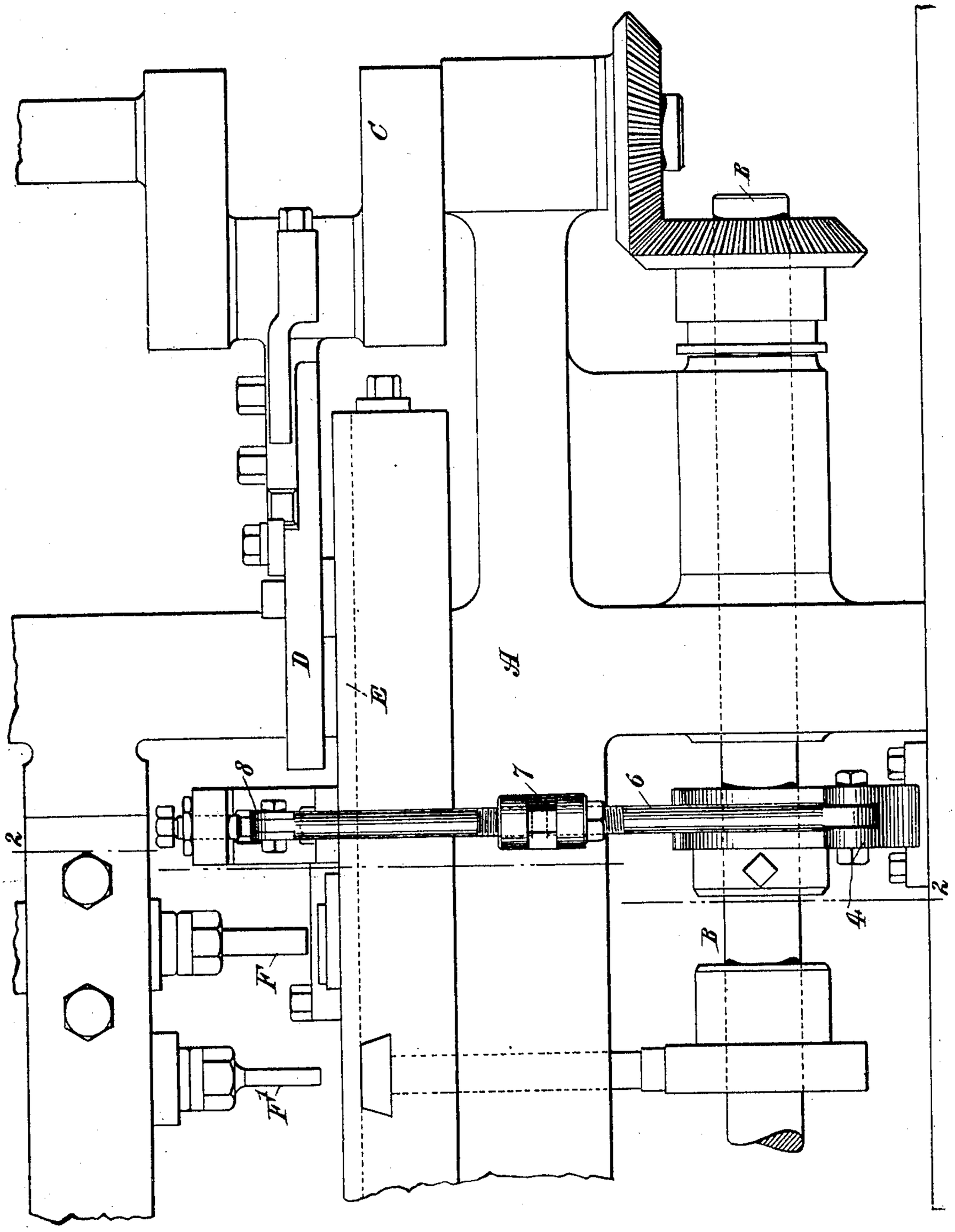

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

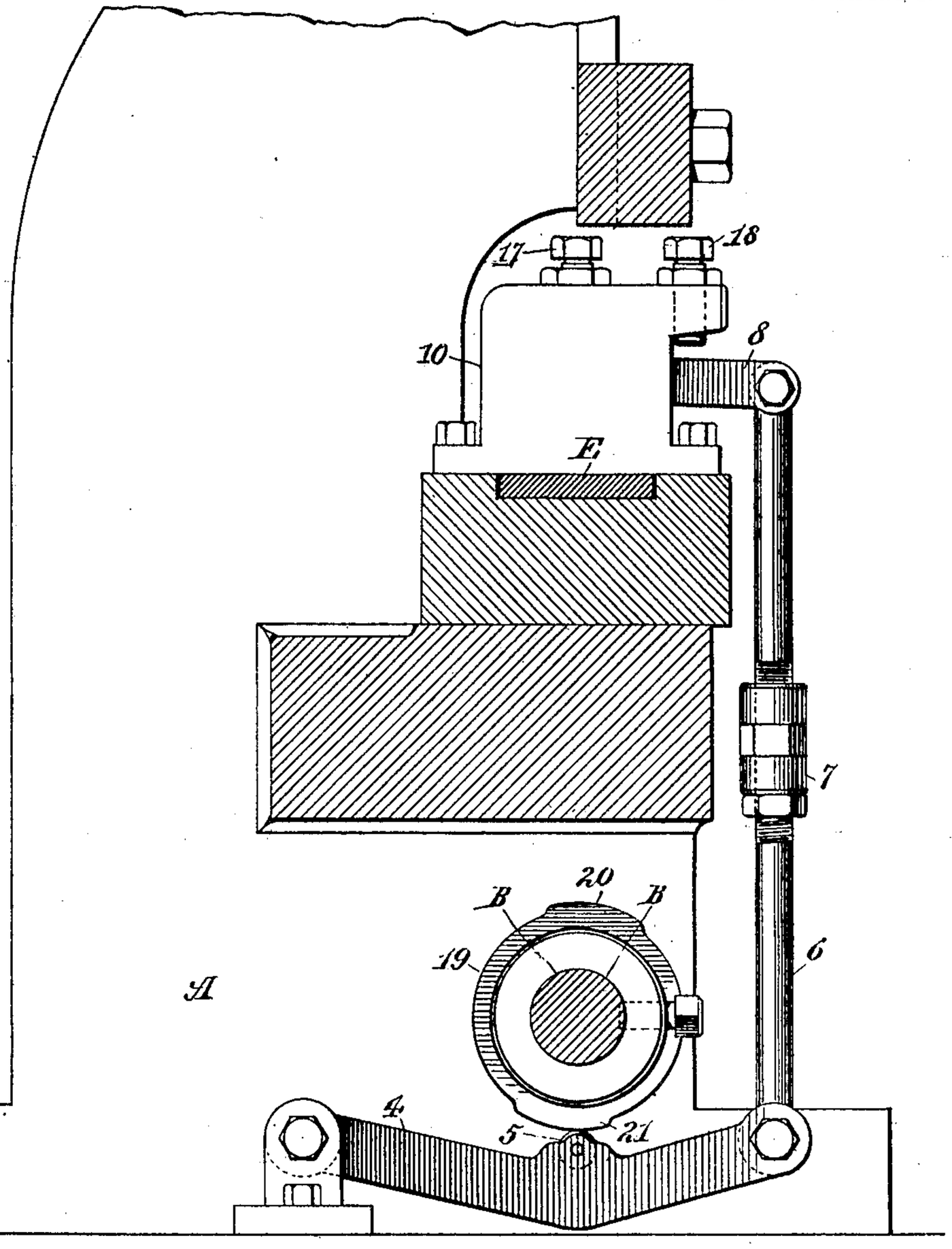
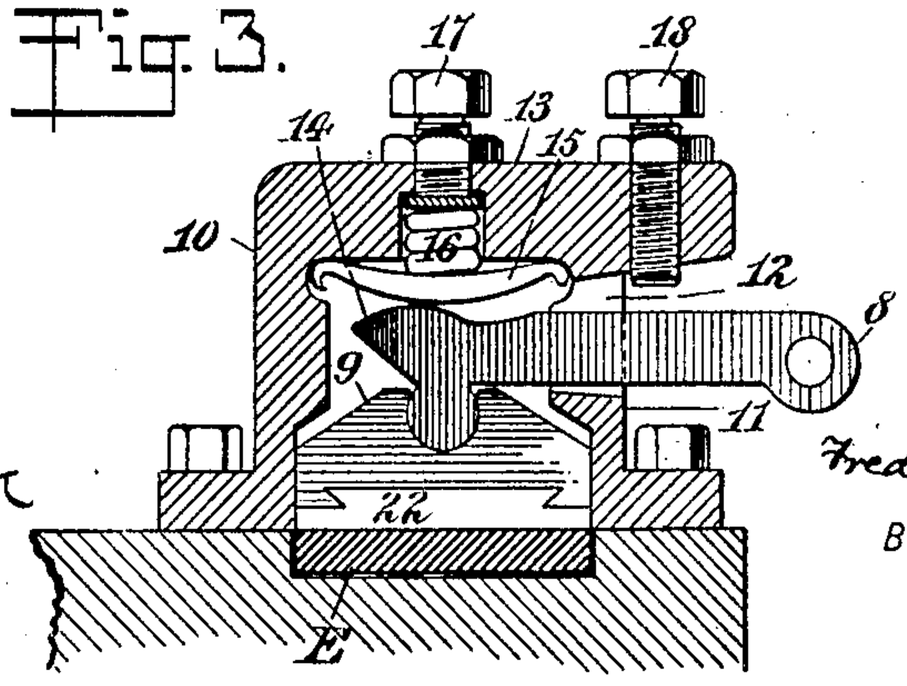


Fig. 3.



WITNESSES

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FRICTIONALLY-CONTROLLED FEEDING DEVICE.

No. 888,179. Specification of Letters Patent. Patented May 19, 1908.

Application filed May 28, 1906. Serial No. 319,052.

To all whom it may concern:

Be it known that I, FREDERICK O. LAWRENCE, a citizen of the United States, and a resident of Ansonia, in the county of New Haven and State of Connecticut, have made and invented certain new and useful Improvements in Frictionally-Controlled Feeding Devices, of which the following is a specification.

My invention relates to an improvement in frictional devices.

It is well known that in many machines, and particularly those designed to work automatically, it frequently becomes necessary to nicely control the moving parts, so that at predetermined times, one or more of such parts will come to a complete stop or rest at a certain point of their movement or travel, in order that the device, article, or material under formation, may be subjected to the successive action of the different parts of the machine. For instance, in those machines which are now in general use for forming eyelets, a carrier is employed for moving or transferring the blank to a die to receive the first operation; from the first die to the second, to receive the second operation, and from the second to the third, and so on until completion, it being highly essential that the partially formed eyelet in each of its stages, be accurately delivered to or under each successive tool or die, in that said tool or die is of such diameter as to be nicely contained within the eyelet. Should the carrier move the partially formed eyelet or blank a distance too great or too small, it will, of course, fail to register with the respective die, the result being that the eyelet will be imperfect. In order to effect this accurate movement of the several parts of the machine, it is necessary that the carrier be held stationary at the proper and precise moment of time.

The object of my invention is to provide means which will thus assist the stoppage of the carrier or other part or portion of the machine at exactly the proper point, by the application of friction thereto at the proper moment, said means allowing said carrier or moving element of the machine to operate freely both before and after the same has reached the point in its travel or movement where it should be brought to rest.

With these and other ends in view, the invention consists in certain novel features of construction, and combinations of parts, as will be hereinafter fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of a part or portion of a machine for forming eyelets, to which my improved device has been applied. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a vertical sectional view showing the arrangement of the spring actuated frictional block.

Referring to the drawings, A represents a part or portion of the frame of a machine for forming eyelets, B a driving shaft geared to the crank C, to which latter is secured one end of the connecting rod D, this rod being in turn connected with the carrier E, adapted to deliver the eyelets under formation to the several tools F, F¹. As such machine is constructed in all material respects like those now ordinarily used for the purpose, and well known and understood by those skilled in this particular art, and as such forms no part of my invention, further detailed description thereof is unnecessary.

To the base or frame of the machine is pivoted one end of the lever 4, provided at some point in its length with the projecting roller 5, the opposite end of said lever being pivoted to the lower end of the rod 6, said rod being preferably adjustable in its length by means of the coupling 7. To the upper end of this rod 6 is pivoted one end of the lever 8, the opposite end engaging the friction block 9 adapted to bear upon the carrier E, the connection between said lever and block being preferably a ball and socket joint, as illustrated in Fig. 3 of the drawings.

To the frame of the machine is bolted or otherwise secured, a housing to contain the friction block, and permit of a vertical movement of the same, this housing consisting of the back wall 10 and front wall 11, the latter being provided with an elongated opening 12 through which extends the lever 8, and of the top wall 13, said front and rear walls 10, 11, being recessed in order to nicely contain the friction block 9 and guide the same in its vertical movement. The inner end of the lever 8 is curved on its upper edge, as illustrated at 14, in order to operate as a cam against the curved leaf spring 15, the ends of which latter are contained within recesses formed in the upper and rear walls of said housing. On the upper side of this leaf spring 15 bears the lower end of the coiled

spring 16, the upper end of said coiled spring bearing against the end of the screw or bolt 17 threaded in the upper wall 13 of the housing. In the upper wall 13 of the housing is also threaded the bolt 18, which may be vertically adjusted to limit the upward movement of the cam lever 8.

To the driving shaft B is keyed, bolted or otherwise secured, the cam disk 19, provided with the raised cam surfaces 20—21, diametrically opposite each other, which when said disk is rotated by the shaft, engage in turn with the roller 5 on the lever 4 and operate to lower the latter, the disk being so adjusted on the shaft that they will engage the roller 5 at the end of the backward and forward strokes of the carrier E, the movement of the latter being, of course, controlled by the crank C.

When the lever 4 is lowered, the outer end of the cam lever 8 is also lowered by reason of its connection with the rod 6, the result being that the cam 14 on the inner end of said lever 8, bearing against the spring 15, will operate to force the friction block or shoe 9 on the carrier E, thus assisting in bringing the latter to a complete stop at just the proper moment, that is, at the end of each backward and forward stroke thereof. As the driving shaft is further rotated, the cam surface 21 will ride over the roller 5, allowing the levers 4, 8, and rod 6 to again rise to their normal positions, and relieving the friction of the shoe 9 on the carrier.

The curve or outline of the cam 14 will vary in accordance with the desired operation of the machine, that is, should it be essential or desirable that the friction block be brought into contact with the carrier or other moving element of the machine at a certain instant of time, the curvature of said cam will be sudden, and in those instances where the friction is to be applied gradually, the curvature of the cam will be greater or more gradual.

In the machine illustrated, it is preferable that the friction block 9 be applied to the carrier E at the instant of time when said carrier reaches the end of its forward and backward stroke, and hence the curvature of said cam is short and sudden, thereby avoiding any frictional contact between the parts prior to the time when such is necessary, and relieving the friction on the carrier except at the precise moment when the carrier should be held stationary.

The friction block or shoe may be constructed of any desirable material, the upper portion being preferably formed of metal, and the lower portion 22, which actually comes into frictional contact with the carrier, being made of metal, leather, rubber, wood, cork, or other desirable material, and preferably dove-tailed into the upper section, in order that it may be easily and readily removed and a new part or portion substituted therefor.

It will of course be understood, that while I have described my improved frictional device as applied to a machine for forming eyelets, such is done for the sake of illustration only, as it is applicable to any and all machines wherein it is essential or necessary to accurately bring to rest and hold stationary any of the moving parts or elements of the machine at predetermined points in their movement or travel, and wherein it is desirable that such moving part be allowed to operate freely both before and beyond the stopping point.

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

1. In a device of the character described the combination with a movable element, of a friction block, and automatically operating means for intermittently bringing said block into contact with said movable element to assist in holding said element stationary, substantially as described.

2. In a device of the character described, the combination with a movable element, of a friction block, and means connected with said block whereby the latter is intermittently brought into contact with said movable element to assist in holding said element stationary, substantially as described.

3. In a device of the character described, the combination with a movable element, of a cam actuated friction block, and means connected with said block whereby the latter is intermittently brought into contact with said movable element at predetermined times to assist in holding said movable element stationary, substantially as described.

4. In a device of the character described, the combination with a movable element, of a friction block, and automatically operating means connected with said block whereby the latter is intermittently brought into contact with said movable element to assist in holding said element stationary, substantially as described.

5. In a device of the character described, the combination with a movable element, of a cam actuated friction block, and automatically operating means connected with said block whereby the latter is brought into contact with said movable element at predetermined times to assist in holding said movable element stationary, substantially as described.

6. In a device of the character described, the combination with a movable element, of a cam actuated friction block and a rotating cam connected with said block whereby the latter is intermittently brought into contact with said movable element at predetermined times to assist in holding it stationary, substantially as described.

7. In a device of the character described, the combination with a movable element, of a cam actuated friction block, a rotating shaft, and means intermediate of said shaft and friction block whereby the latter is intermittently brought into contact with said movable element at predetermined times to assist in holding it stationary, substantially as described.

8. In a device of the character described, the combination with a movable element, of a friction block, a cam lever connected with said block, springs engaging with said cam, a rotating shaft, and means intermediate of said shaft and friction block whereby the latter is intermittently brought into contact with said movable element at predetermined times for assisting in holding it stationary, substantially as described.

Signed at New York, borough of Manhattan, in the county of New York, and State of New York, this 26th, day of May, A. D. 1906.

FREDERICK O. LAWRENCE.

Witnesses:
M. VAN NORTWICK,
NORRIS B. SMITH.