

1,083,484.

3 SHEETS—SHEET 1.

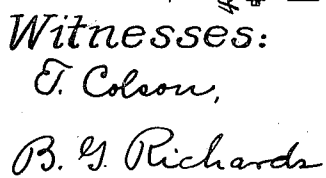


Fig. 7.

Fig. 8.

Inventor:
Christopher J. Duggan
 *By Joshua N. Lora*
his Attorney.

C. J. DUGGAN.
PERFORATING MACHINE.
APPLICATION FILED DEC. 19, 1912.

1,083,484.

Patented Jan. 6, 1914.

3 SHEETS-SHEET 2.

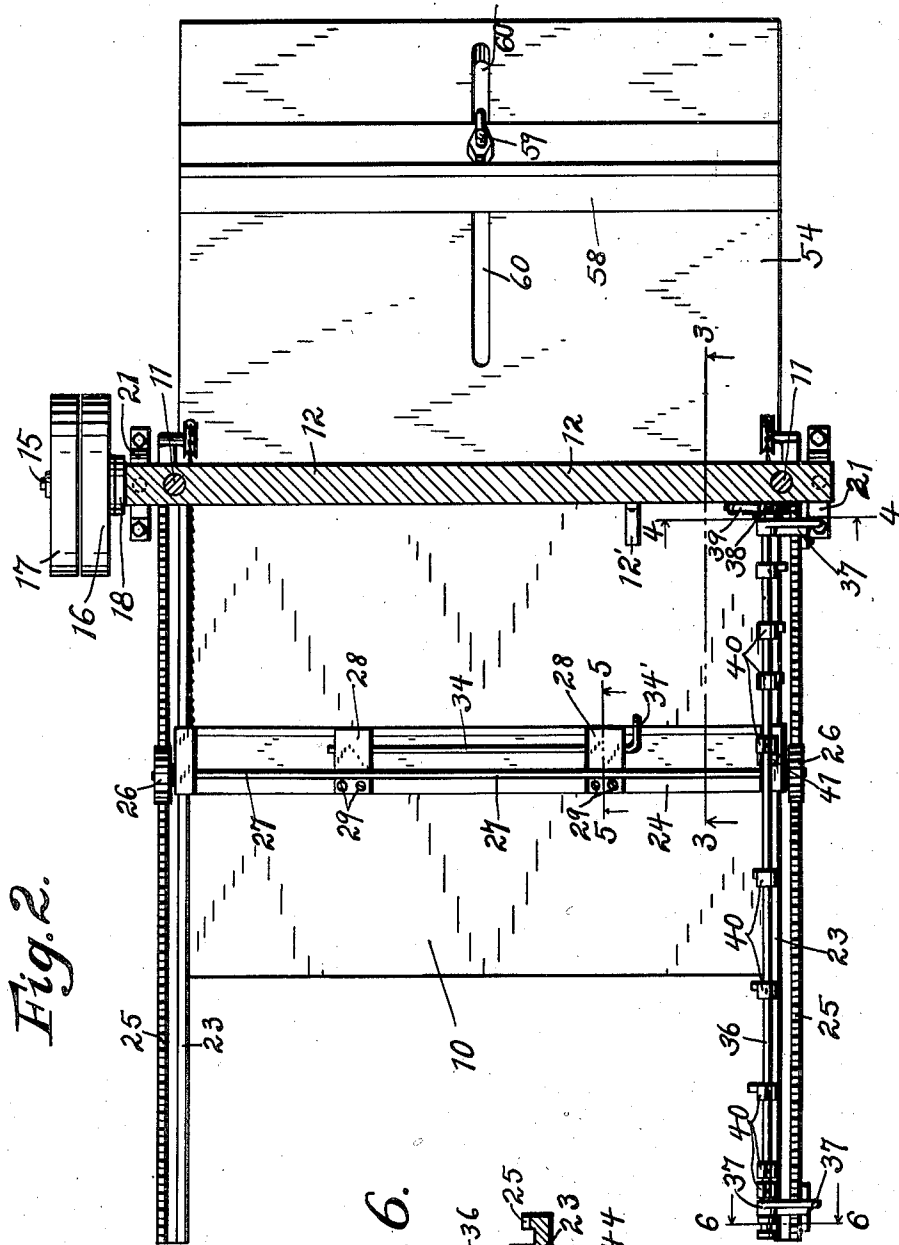


Fig. 2.

Fig. 6.

Witnesses:

T. Colson,

B. W. Richards

Inventor

Christopher J. Duggan,

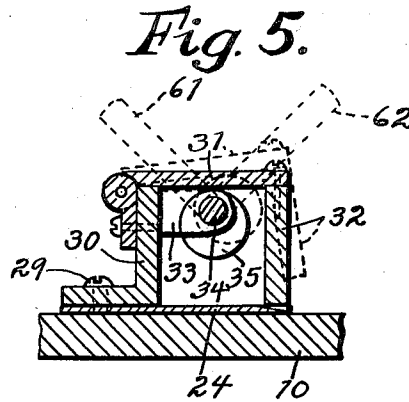
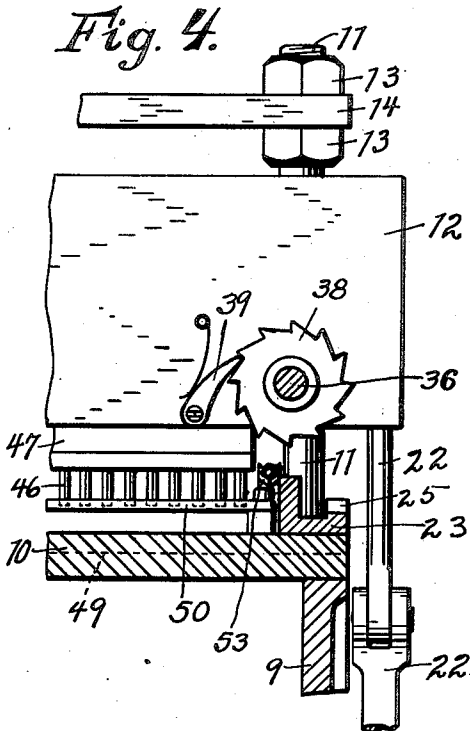
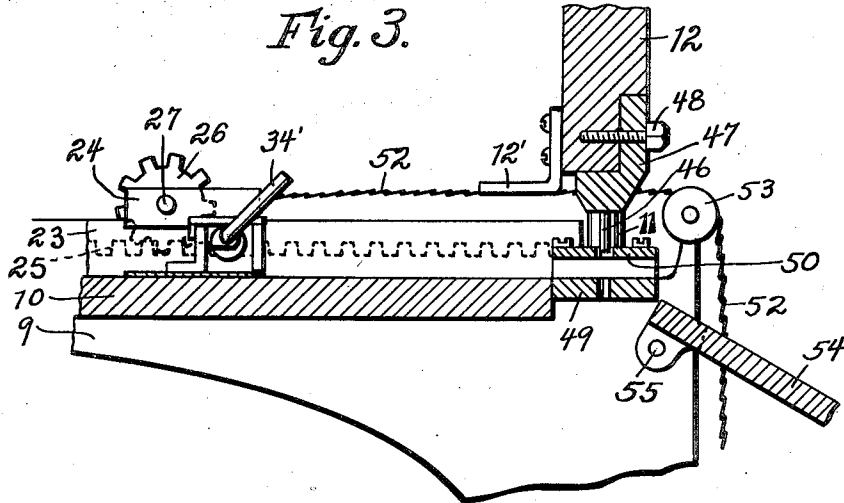
By *Joshua H. Duggan*
his Attorney.

C. J. DUGGAN.
PERFORATING MACHINE.
APPLICATION FILED DEC. 19, 1912.

1,083,484.

Patented Jan. 6, 1914.

3 SHEETS—SHEET 3.



Witnesses:
T. Colson,
B. G. Richards

Inventor:
Christopher J. Duggan,
By *Joshua R. Horne*
his Attorney.

UNITED STATES PATENT OFFICE.

CHRISTOPHER J. DUGGAN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO ROBERT J. FARRELL, OF CHICAGO, ILLINOIS.

PERFORATING-MACHINE.

1,083,484.

Specification of Letters Patent.

Patented Jan. 6, 1914.

Application filed December 19, 1912. Serial No. 737,659.

To all whom it may concern:

Be it known that I, CHRISTOPHER J. DUGGAN, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Perforating-Machines, of which the following is a specification.

My invention relates to perforating machines and particularly to the class of such machines which are adapted to perforate paper, card-board and the like.

The object of this improvement is to provide a machine of this character which will automatically perforate such paper, card-board or the like in a number of predetermined places.

A further object is to provide a machine of this character which will be simple in its construction and effective in its operation.

Other objects will appear hereinafter.

The invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which—

Figure 1 is a side elevation of a machine built in accordance with my invention, Fig. 2 is a plan view of the same, Fig. 3 is a fragmental section of the same taken on line 3—3 in Fig. 2, Fig. 4 is a section taken on line 4—4 in Fig. 2, Fig. 5 is an enlarged section taken on line 5—5 in Fig. 2, Fig. 6 is a section taken on line 6—6 in Fig. 2, Fig. 7 is a section taken on line 7—7 in Fig. 1, and Fig. 8 is an enlarged section of an adjustable stop member in this machine.

The preferred form of construction, as illustrated in the drawings, comprises a frame 9 upon which is secured a table 10. On the front end of the table 10 are two upright slide rods 11 upon which is mounted a head 12 to slide vertically thereon. The tops of the slide rods 11 are spaced apart by means of the nuts 13 and bar 14 in a manner to retain them in rigid parallel relation. A shaft 15 is journaled in the lower portion of the frame 9 and driven by means of a pulley 16. A loose pulley 17 is also provided on the shaft 15 to serve the usual function. A clutch connection 18 is provided between the shaft 15 and pulley 16 and is actuated by means of a shaft 19 and foot pedal 20.

Said clutch member is formed so that it will automatically cause the shaft 15 to stop upon one complete revolution thereof. The details of this construction are old and are not specifically shown as no claim is made thereto. On the shaft 15 are eccentrics 21 and the connecting rods 22 connect such eccentrics with the head 12 as clearly shown.

A channel guide 23 is secured along each of the side edges of the table 10, the inner leg of each channel guide 23 serving as a guide for the feeding carriage 24 and the outer leg of the channel guide is provided with rack teeth 25 which are engaged by pinions 26 secured on a shaft 27. Said shaft 27 is journaled in the carriage 24 and provided to maintain the carriage 24 in alignment on the table 10. The front edge of the carriage 24 is beveled in order to facilitate placing work thereon.

Two work holding clamps 28 are carried by the carriage 24 and secured thereto by means of screws 29 or their equivalent. Each of the work holding clamps 28 is composed of an angle bar 30 to which is hingedly connected a plate 31 and a second plate 32 secured to the plate 31 as clearly illustrated in Fig. 5. A bearing member 33 is provided in each of the clamp members 28 and a shaft 34 journaled therein. In each of the clamp members 28 on the shaft 34 is an eccentric 35 adapted upon rotation of the shaft 34, to raise the plates 31 and 32 to their dotted line positions indicated in Fig. 5. When released by said eccentrics the lower edges of the plates 32 are adapted to clamp work between such lower edges and the carriage 24. Shaft 34 is provided with a bent end portion 34' which is adapted to engage a member 12' on the head 12 to cause rotation of said shaft 34 as will be explained hereinafter.

A shaft 36 is journaled in bearings 37 which are secured to one of the channel guides 23 as clearly shown. Said shaft 36 is mounted in parallel relation with and above the channel member 23 as clearly indicated. A ratchet wheel 38 is provided on one end of shaft 36 and adapted to engage a pawl 39 on head 12 to cause intermittent rotation of the shaft 36. The upward stroke of the head 12 is designed to produce the operative stroke of the ratchet and pawl connection to operate the shaft 36.

Adjustably secured on the shaft 36 are a

plurality of stops 40 each of which is adapted to successively engage a stop 41 on one end of the carriage 24 to automatically retain said carriage in predetermined positions, as clearly illustrated. Said stops are preferably slitted and provided with a binding screw 42 as clearly illustrated in Fig. 8 so that each will be held in any position on shaft 36 and be easily adjusted from one to another position.

A friction producing member is provided on the shaft 36 to prevent said shaft from rotating after said ratchet 38 is disengaged by said pawl 39. Said friction member comprises a flexible strap 43 secured to one leg of the guides 23 and provided with a weight 44 to produce the desired amount of friction. Collars 45 may be provided on the shaft 36 to prevent longitudinal movement of the strap 43 on said shaft 36.

The head 12 is provided with a plurality of punches 46 which are carried by a member 47 and the latter is secured to said head 12 by means of screws 48 as clearly illustrated in Fig. 3. On the frame 9 is secured a die 49 adapted to cooperate with the punches 46 to perforate the paper, cardboard or the like. A stripping plate 50 is provided in the usual manner to free the punches from the work after being perforated.

The carriage 24 is moved toward the head 12 by means of two weights 51, one of which is shown, and cords 52 which pass over pulleys 53 and engage opposite ends of the carriage 24 as clearly illustrated.

A table 54 is hinged to the frame 9, as at 55 and provided with brace members 56 which are adapted to engage stops 57 on frame 9 to maintain the table 54 at different heights as will be readily understood upon referring to Fig. 1. A stop member 58 is provided on the table 54 and adapted to be adjusted thereon by means of a thumb bolt 59 in a slot 60.

In operation, power is applied to the machine through pulley 16 to cause rotation of the shaft 15. The stop members 40 are set at desired positions on shaft 36 to produce perforations at desired distances apart in the work to be perforated. The bent portion 34' of the shaft 34 is manually thrown to the dotted line position 61 in Fig. 5 to raise the plates 31 and 32 of the work holding clamps 28 and work inserted under said clamps against the angle bar portions 30 of said clamps and the bent portion 34' moved to the dotted line position 62 in Fig. 5 to firmly hold the work on the table 10. The carriage 24 is then moved away from the head 12 until the position is reached at which the first perforations are to be made and one of the stops 40 brought in engagement with the stop 41 to lock the carriage in such position. Upon depressing the foot pedal

20, clutch member 18 causes shaft 15 to make one complete revolution which causes the head 12 to be reciprocated and the punches 46 to perforate the work. Upon the upward movement of the head 12 the pawl 39 causes the ratchet wheel 38 and shaft 36 to revolve and disengage the stop 40 from stop 41 and bring the next stop 40, in the direction of head 12, in the path of the stop 41 to stop the forward movement of carriage 24, which as already explained, is caused by the weights 51 and cords 52, bringing the work in the correct position for the next row of perforations. The operator again moves the foot pedal 20 causing the machine to produce another row of perforations in the work and the carriage 24 to be fed toward the head 12 again. This operation is continued until the bent portion 34' of the shaft 34 reaches the member 12' on head 12, all of the perforations in the work having been made, which moves the bent portion 34' to its dotted line position 61 as indicated in Fig. 5 to release the work from the work holding clamps 28 and allow it to slide on table 54 against the stop 58.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. In a machine of the kind described having a track, a work feeding carriage mounted on said track; a stop on said carriage; a shaft journaled on one rail of said track; a ratchet and pawl connection between said machine and said shaft whereby the operation of said machine causes intermittent rotation of said shaft; and stops spaced apart on said shaft and adapted to consecutively engage the stop on said carriage on rotation of said shaft to arrest movement of the carriage, substantially as described.

2. A machine of the kind described comprising a frame; a reciprocating head mounted in said frame; a carriage mounted in said frame; a stop on said carriage; a shaft journaled on said frame; means connecting said shaft and head adapted to cause intermittent rotation of the former upon reciprocation of the latter; and a plurality of stops on said shaft, said stops being adapted to come into registration with the stop on said carriage on rotation of said shaft, substantially as described.

3. A machine of the kind described com-

prising a frame; a reciprocating head mounted in said frame; a carriage mounted in said frame; a stop on said carriage; a shaft journaled on said frame; a ratchet and pawl gearing connecting said head and said shaft; and a plurality of stops on said shaft, said stops being adapted to be brought into successive registration with the stop on said carriage upon rotation of said shaft, substantially as described.

4. A machine of the kind described, comprising a frame; a reciprocating head mounted in said frame; a carriage mounted in said frame; a stop on said carriage; a shaft journaled on said frame; a ratchet and pawl gearing connecting said head and said shaft; a plurality of stops on said shaft, said stops being adapted to be brought into successive registration with the stop on said carriage upon rotation of said shaft; and a friction lock engaging said shaft and preventing retrograde rotation thereof, substantially as described.

5. A machine of the kind described, comprising a frame; a reciprocating head mounted in said frame; a carriage mounted

in said frame for movement toward and away from said head; a work abutting plate on said carriage; a lock hinged to said plate and adapted to lock work on said carriage; and means on said plate and operable by said head adapted to operate said lock, substantially as described.

6. A machine of the kind described, comprising a frame; a reciprocating head mounted in said frame; a carriage mounted in said frame for movement toward and away from said head; a work abutting plate on said carriage; a lock hinged to said plate and adapted to lock work on said carriage; a shaft journaled on said plate; a cam on said shaft for raising said lock; and an arm on said shaft operable by said head, substantially as described.

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

CHRISTOPHER J. DUGGAN.

Witnesses:

JOSHUA R. H. POTTS,
A. A. OLSON.