

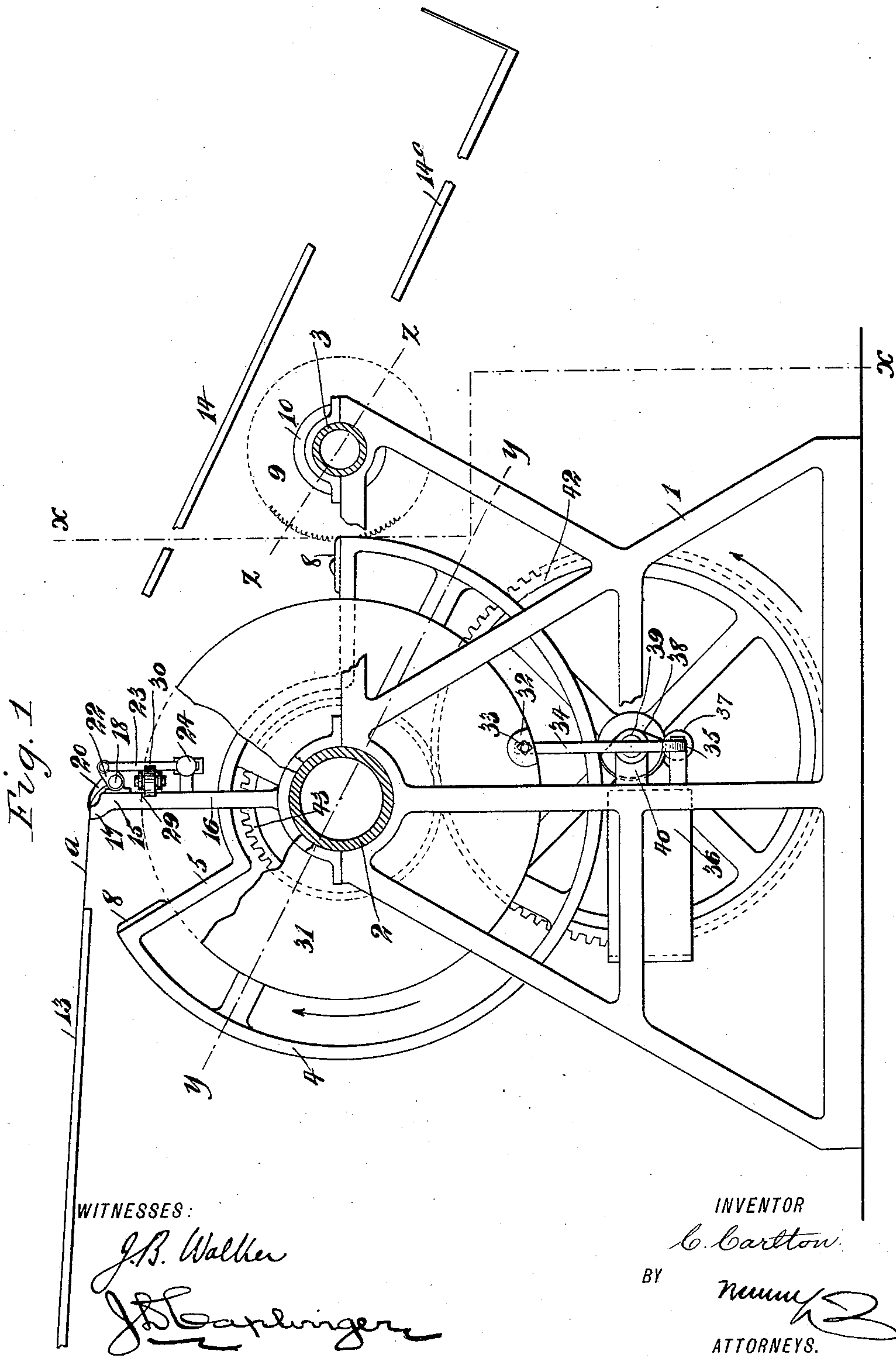
(No Model.)

2 Sheets—Sheet 1.

C. CARLTON.  
PERFORATING MACHINE.

No. 583,616.

Patented June 1, 1897.



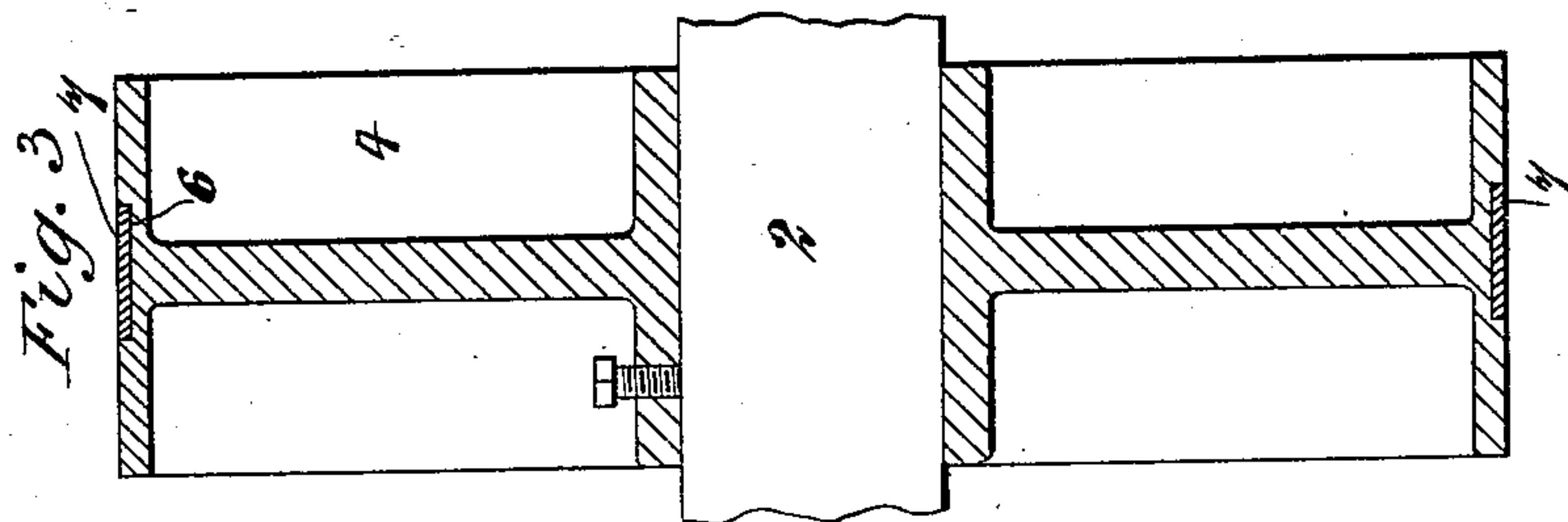
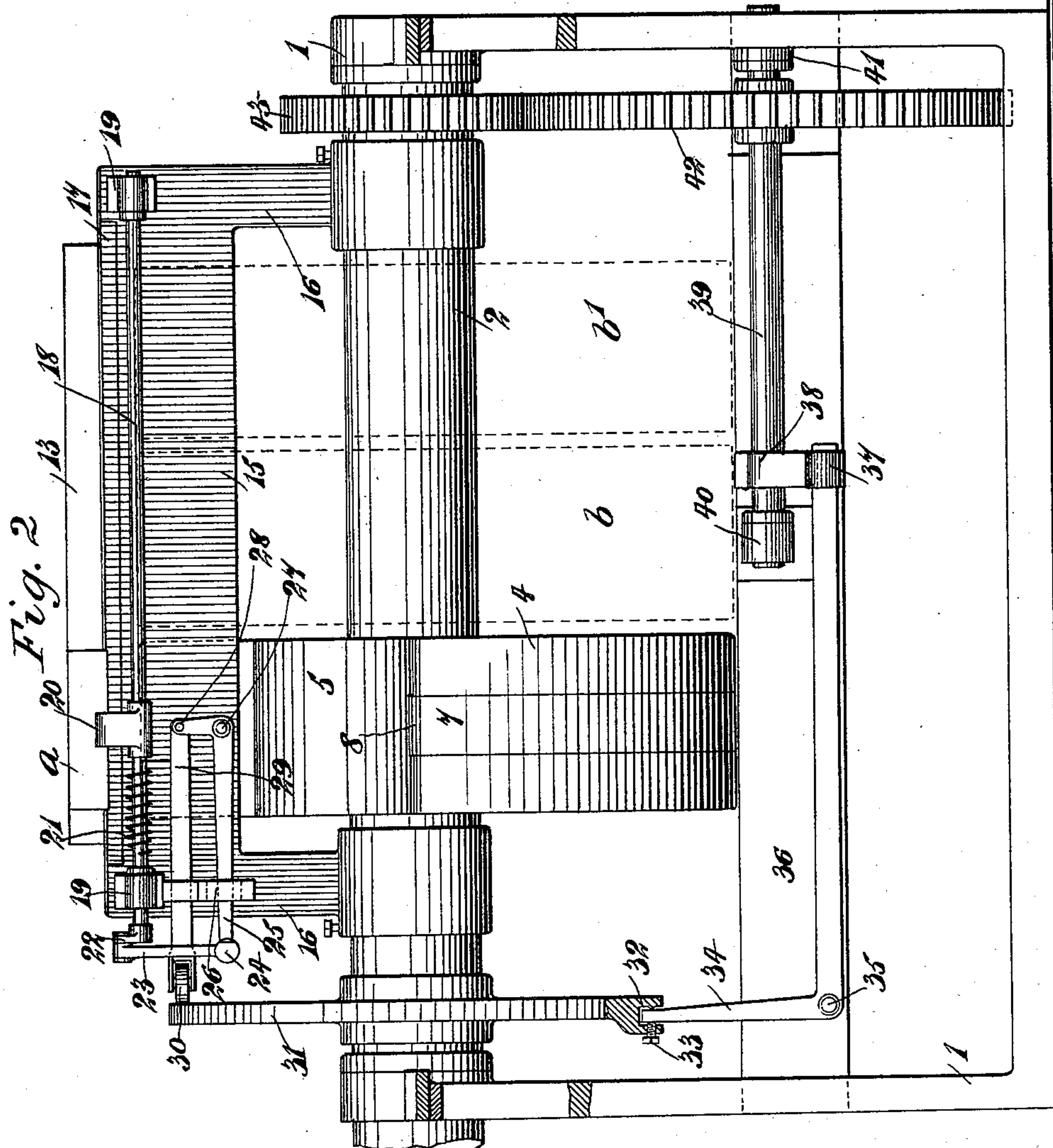
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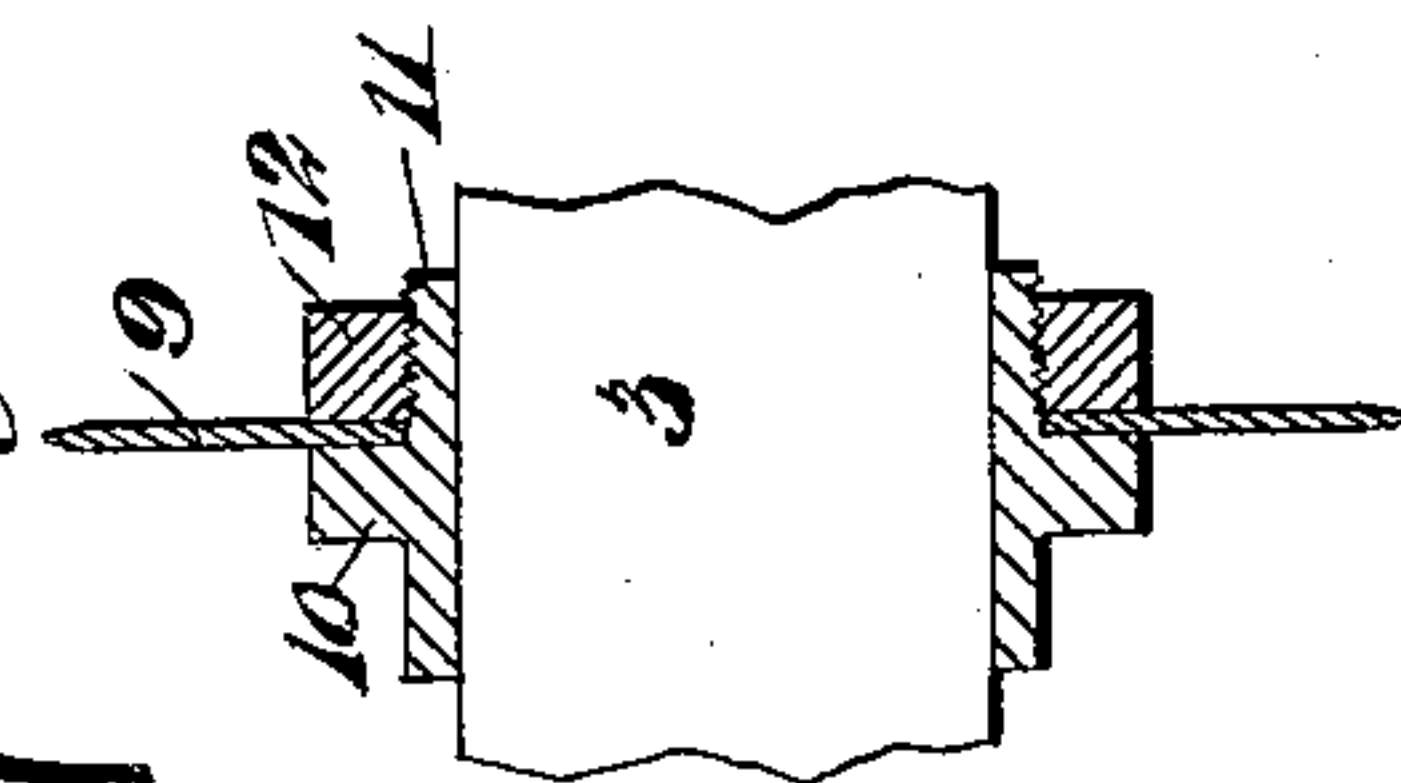


WITNESSES:

J. B. Walker

J. H. Carpenter

Fig. 4



INVENTOR

C. Carlton

BY

M. B. B.

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

CORTLAND CARLTON, OF KANSAS CITY, MISSOURI.

## PERFORATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 583,616, dated June 1, 1897.

Application filed January 24, 1896. Serial No. 576,738. (No model.)

*To all whom it may concern:*

Be it known that I, CORTLAND CARLTON, of Kansas City, in the county of Jackson and State of Missouri, have invented a new and Improved Perforating-Machine, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in machines for perforating paper and the like, and has for its object to provide a device of this character of a simple and inexpensive construction which shall be adapted to perforate the paper in a uniform manner and which shall be adapted for rapid operation and for adjustment so as to perforate the paper along different lines.

The invention consists in such combinations and features of construction as are defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of a machine constructed in accordance with my invention; portions thereof being broken out in order to illustrate certain of the operating parts. Fig. 2 is a vertical section taken through the machine in the plane indicated by the line  $xx$  in Fig. 1. Fig. 3 is an enlarged sectional detail view on the line  $yy$  in Fig. 1, showing the construction of the cylinder of the machine; and Fig. 4 is a similar view on the line  $zz$  in Fig. 1, showing the construction of the perforating-disk.

In the views, 1 indicates the frame, constructed, preferably, of metal, at the upper part of which are journaled parallel shafts 2 and 3, provided with driving devices, (not shown,) said shafts being preferably made tubular, as shown in Fig. 1. On the shaft 2 is mounted a cylinder 4, said cylinder being made in the form of an ordinary pulley or drum and having one side recessed, as indicated at 5 in Figs. 1 and 2.

The cylinder 4 is grooved around its periphery, as indicated at 6, and in said groove is arranged a band or strip 7, of lead or other soft material, adapted to underlie the paper at the point where the same is engaged by the perforating device, as hereinafter explained, and said band or strip 7 has its end

portions 8 bent down along the sides of the recessed portions 5 of the cylinder, as clearly shown in Fig. 1, and secured to said sides by means of screws or the like, as will be readily understood.

The perforating device comprises a disk 9, having a toothed or serrated edge, as clearly shown in the drawings, said disk being mounted on a collar 10, secured on the shaft 3 of the machine in such a position that the edge of the disk 9 is adapted to engage the paper on the cylinder 4, as will be hereinafter explained, at a point opposite the strip 7 on said cylinder, and said collar 10 is provided with a reduced screw-threaded portion 11, adapted to receive a nut 12, whereby the disk 9 is held in place on the collar, as clearly shown in the detail view Fig. 4.

The machine is provided with a sheet-feeding table 13, from which are fed sheets of paper or the like to be perforated, and with a delivery-slide 14 for the discharge of the sheets and with a paper-rack 14<sup>a</sup> beneath said delivery-slide and adapted to receive the sheets passing over the same in a well-known way, and the sheets  $a$  are fed from the feed-table 13 by means of a grip moving in unison with the cylinder 4 and of the construction I will now describe.

The gripper is mounted on a frame 15, extending transversely of the machine parallel to the shaft 2, said frame being provided with arms 16, having bosses at their ends, which are secured to the opposite end portions of said shaft 2, as clearly shown in Fig. 2, and one jaw 17 of the gripper is formed integrally with the frame 15, as clearly shown in Fig. 1. The frame 15 may be adjusted circumferentially on the shaft 2 and within the recessed or cut-away portion 5 of the cylinder 4. A shaft 18 extends longitudinally of the frame 15 of the gripper, being journaled in brackets or lugs 19 at opposite ends thereof, and on said shaft is secured a movable gripper-jaw 20, arranged to grip the paper between it and the stationary jaw 17, as will be readily understood. The shaft 18 is provided with a spring 21, arranged to hold the movable jaw 20 normally in engagement with the stationary jaw 17.

One end of the shaft 18 projects beyond the frame 15 and is provided with a crank-



arm 22, the outer end of which is coupled to a link 23, extending downward and connecting at its lower end by means of a ball-joint or universal couple 24 with the outer end of an elbow-lever 25, pivoted at 27 on the frame 15 and arranged to play in a guide 26, the opposite end of said lever being coupled, as indicated at 28 in Fig. 2, with the inner end of a slide-bar 29, mounted to slide in the guide 26 and having its outer end forked to receive a roller 30, pivoted between said forks.

The roller 30 is arranged to project beyond the frame 15 and the other devices carried thereon and is in engagement with a disk 31, mounted to slide longitudinally on the shaft of the said disk, being provided at its lower part with a socket 32, in which is held, by means of a set-screw 33, the upper end of an elbow-lever 34, pivoted at 35 to a brace 36 of the frame 1 of the machine, as clearly shown in Fig. 2, and having a horizontal arm provided with a roller 37, engaged by a cam 38 on a shaft 39, journaled at one end in a bearing 40 on said brace 36 and having its opposite end journaled, as shown at 41 in Fig. 2, in the side of the frame 1.

As shown in the drawings, the cam 38 is approximately a half-circumference in length and suitably located upon the shaft, so that it will actuate the cooperating parts, as described.

On the shaft 39 is fixed a large gear-wheel 42, meshing with a pinion 43 on the shaft 2, and by preference the gear-wheel 42 is provided with twice as many teeth as the pinion 43, whereby it will be seen that the shaft 39 will be turned one complete rotation at each two rotations of the shaft 2.

In operation the shafts 2 and 3 being driven in any suitable way, as by means of pulleys and belts, the cylinder 4 is caused to revolve together with the gripper-frame 15, which, as will be readily understood from Figs. 1 and 2, is adjustably mounted on the shaft 2, so as to be set in any preferred position relatively to the cylinder 4. The gripper will be usually mounted, as seen in Fig. 1, at the cut-out portion 5 of the cylinder. As the cylinder and gripper-frame turn, the shaft 39 is rotated so as to move the disk 31 endwise on the shaft 2, whereby the gripper-jaw 20 is moved out of engagement with the gripper-jaw 17 to permit the insertion of a sheet  $\alpha$  of paper, as indicated in Fig. 1, between said jaws. When the cam 38 ceases to act on the roller 37, the spring 21 returns the movable gripper-jaw 20 into engagement with the gripper-jaw 17 to securely hold the sheet of paper, and said sheet will thereupon be drawn down over the feed-table 13 and will be carried around, its rear part passing upon the periphery of the cylinder 4 and being perforated by the disk 9, which will engage said sheet at a point opposite the leaden strip 7. When the cylinder and gripper shall have completed one rotation, the cam 38 will again act upon the roller 37, so as to open the grip-

per-jaws and permit the sheet of paper carried thereby to pass down the delivery-slide 14 and onto the rack 14<sup>a</sup>, after which the cylinder and gripper will complete another rotation, this, however, being accomplished without perforating the sheet, since the gripper will have passed the point at which it grips the paper without having been supplied with a fresh sheet.

By adjusting the gripper-frame on the recessed or cut-away portion 5 of the cylinder 4 the distance between the paper end which is gripped and the point at which the perforating begins may be regulated. This enables me to control the length of the stub or unperforated portion of the work.

The shafts 2 and 3 will be, by preference, made of such a length and the other parts of the machine will be so proportioned that, if desired, a series of cylinders and perforating-disks may be arranged on said shafts, as indicated at  $b b'$  in Fig. 2, whereby it will be seen that several sheets of paper may be perforated at once or that a wide sheet may be perforated along different lines.

From the above description of the invention it will be seen that the device is of an extremely simple and inexpensive nature and is well adapted for the purposes for which it is designed, and it will also be obvious that the invention is susceptible of considerable modification without material departure from its principles and spirit, and for this reason I do not wish to be understood as limiting myself to the exact form and arrangement of the parts herein set forth.

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

1. In a perforating-machine, the combination of a machine-frame, a shaft mounted to turn therein, a gripper-frame extending parallel to the shaft but spaced apart therefrom and provided at its ends with arms connected to the shaft, gripping devices carried on the gripper-frame and adapted to receive and hold a sheet of paper, a cylinder mounted on the shaft between the arms of the gripper-frame and adjustable longitudinally in the space between said frame and the shaft, said cylinder being adapted to receive on its periphery the paper held by the gripping devices, and a perforating device to perforate the paper on the cylinder, substantially as set forth.

2. The combination with a frame, of a perforator, a shaft revolubly journaled in the frame, a drum fixed to the shaft and having a recessed or cut-away portion, a gripper-frame in connection with the shaft and extending through the recess or cut-away portion of the drum, a rock-shaft carried by the gripper-frame, a gripper fixed to the rock-shaft, a spring actuating the rock-shaft, a lever fulcrumed on the gripper-frame and connected with the rock-shaft, a member movably carried by the shaft and capable of engaging the lever, and means for moving the



member independently of the shaft, substantially as described.

3. The combination with a frame, of a perforator, a shaft revolubly mounted in the frame, a drum fixed to the shaft and having a recessed or cut-away portion in its periphery, a gripper-frame fixed to the shaft and extended through the recessed or cut-away portion of the periphery, a rock-shaft carried by the gripper-frame, a gripper fixed to the rock-shaft, a spring actuating the rock-shaft, an elbow-lever fulcrumed on the gripper-frame, a link having crank connection with the rock-shaft and universal connection with the elbow-lever, and means for imparting movement to the said elbow-lever, substantially as described.

4. In a perforating-machine, the combination with a frame and means against which the work may bear; of a gripper-frame, a rockably-mounted gripper carried thereby, a spring pressing the gripper, an elbow-lever fulcrumed on the gripper-frame, a connection between the elbow-lever and the gripper, a link connected to the elbow-lever, and means capable of engaging the link to rock the elbow-lever, substantially as described.

5. In a perforating-machine, the combination with a frame and means against which the work may bear, of a gripper-frame, a rock-shaft, a gripper fixed to the rock-shaft, a link having crank connection with the rock-shaft, a lever to which the link is also connected, a second link pivotally connected to the lever, means for moving the second link

by which the rock-shaft is moved in one direction, and a spring capable of moving the rock-shaft in a second direction, substantially as described.

6. In a perforating-machine, the combination with a frame, of a perforator mounted thereon, a shaft, a cylinder fixed to the shaft and having a recessed or cut-away portion in its periphery, a gripper-frame carried by the shaft and passing into the recessed or cut-away portion of the cylinder, the gripper-frame being adjustable circumferentially on the shaft and throughout the length of the recessed or cut-away portion of the cylinder, and a periodically-operated gripper carried by the gripper-frame, substantially as described.

7. The combination with a frame, of a shaft, a gripper-frame fixed to the shaft, a gripper carried by the gripper-frame, means for transmitting movement to the gripper, such means being carried by the gripper-frame, a plate longitudinally movable on the shaft and capable of engaging at its side the means for transmitting movement to the gripper, a lever having a connection with the plate by which the plate may be moved on the shaft, a drive-shaft, and means on the drive-shaft by which the lever may be rocked, substantially as described.

CORTLAND CARLTON.

Witnesses:

JAMES G. YOUNG,  
KITTIE REES.