

No. 705,308.

Patented July 22, 1902.

G. P. SCHMIDT.

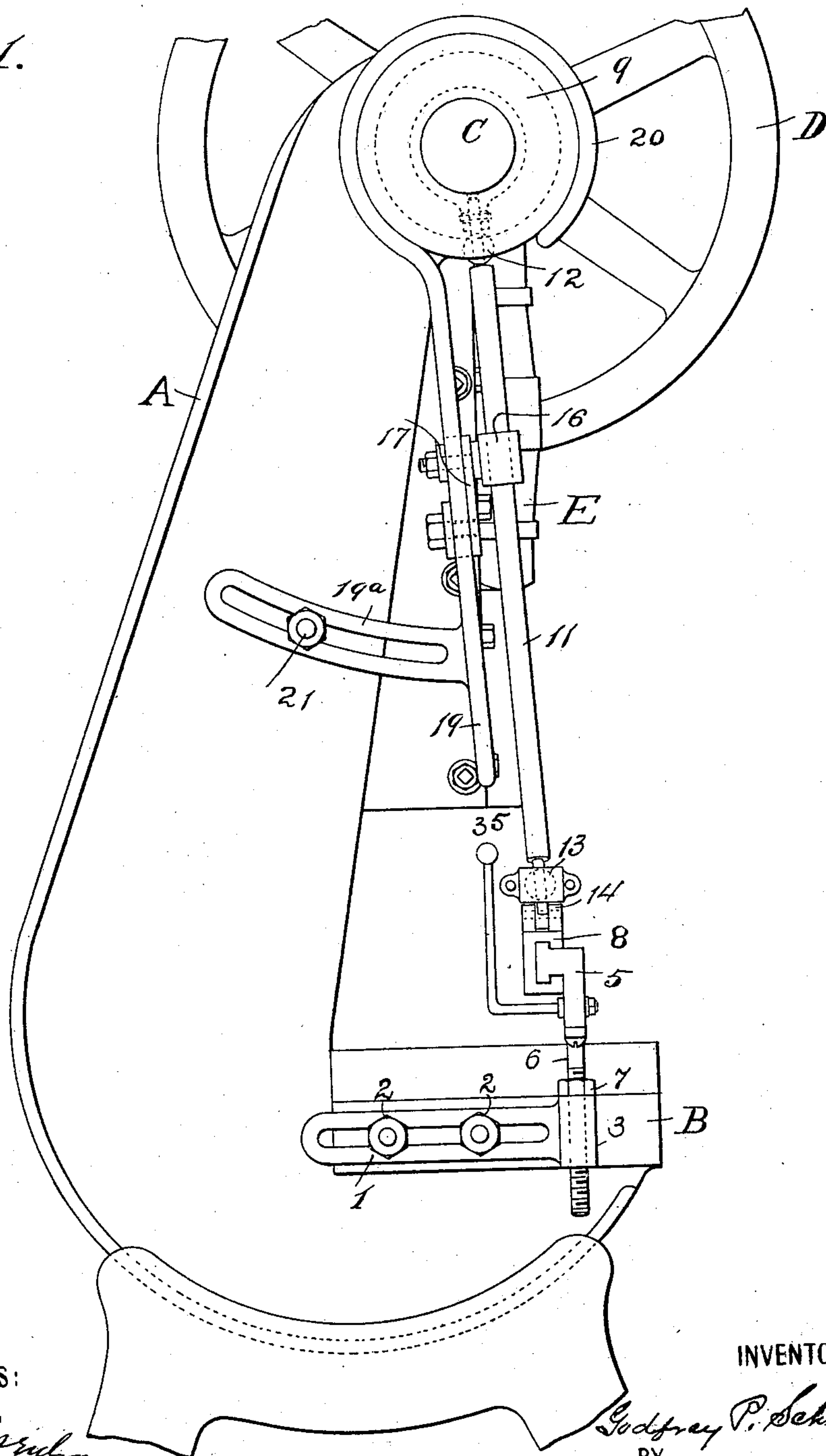
AUTOMATIC FEEDING MECHANISM FOR STAMPING PRESSES OR THE LIKE.

Application filed Nov. 2, 1901.)

4 Sheets—Sheet 1.

(No Model.)

Fig. 1.



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4 Sheets—Sheet 2.

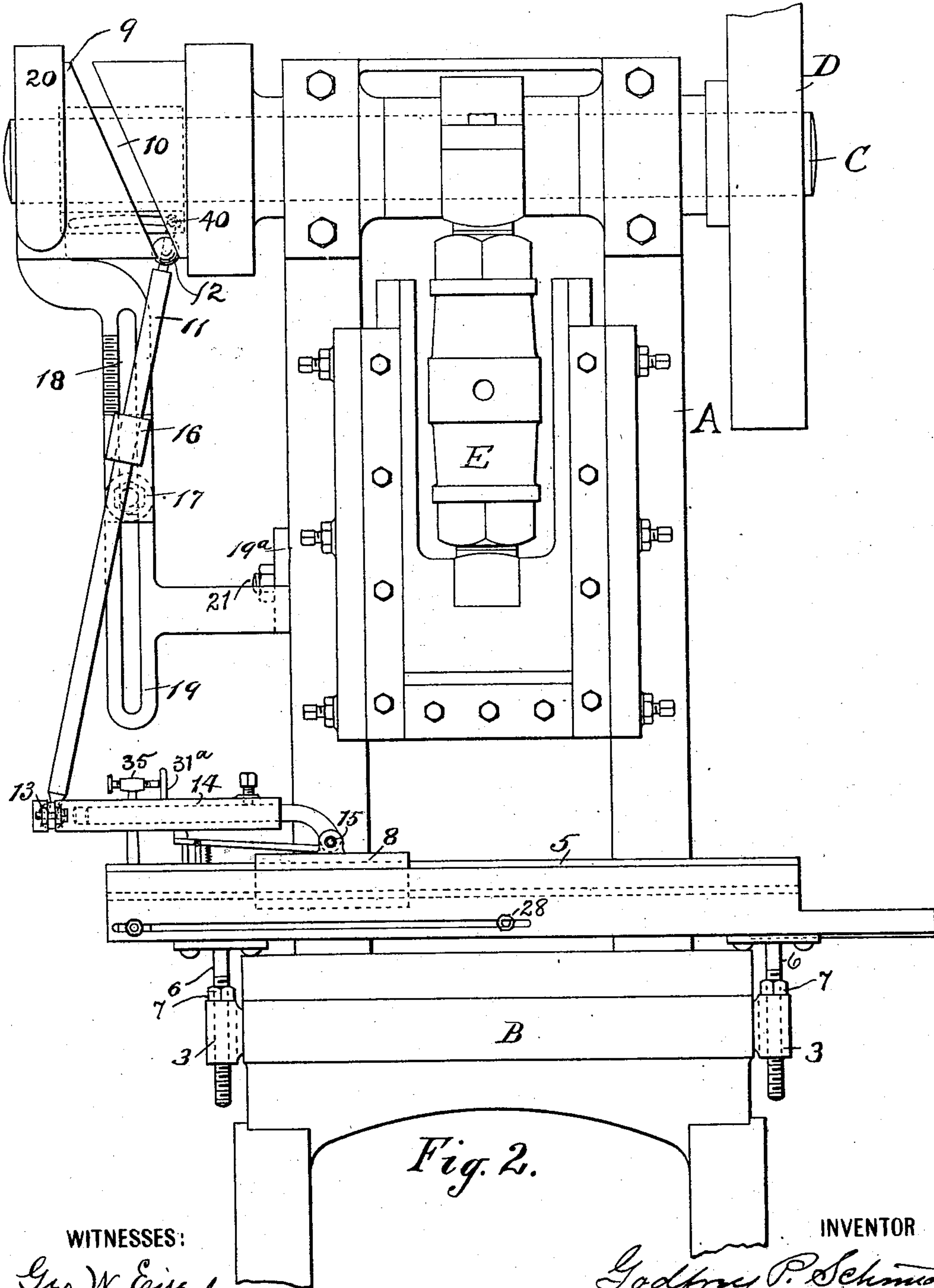


Fig. 2.

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4 Sheets—Sheet 3.

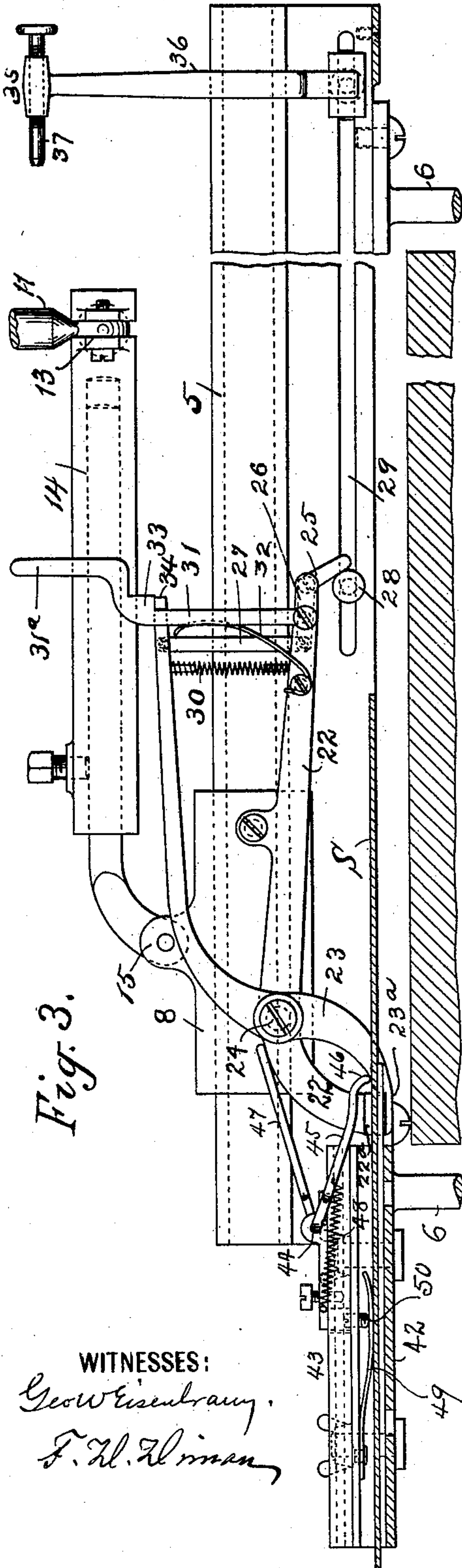


Fig. 3.

WITNESSES:

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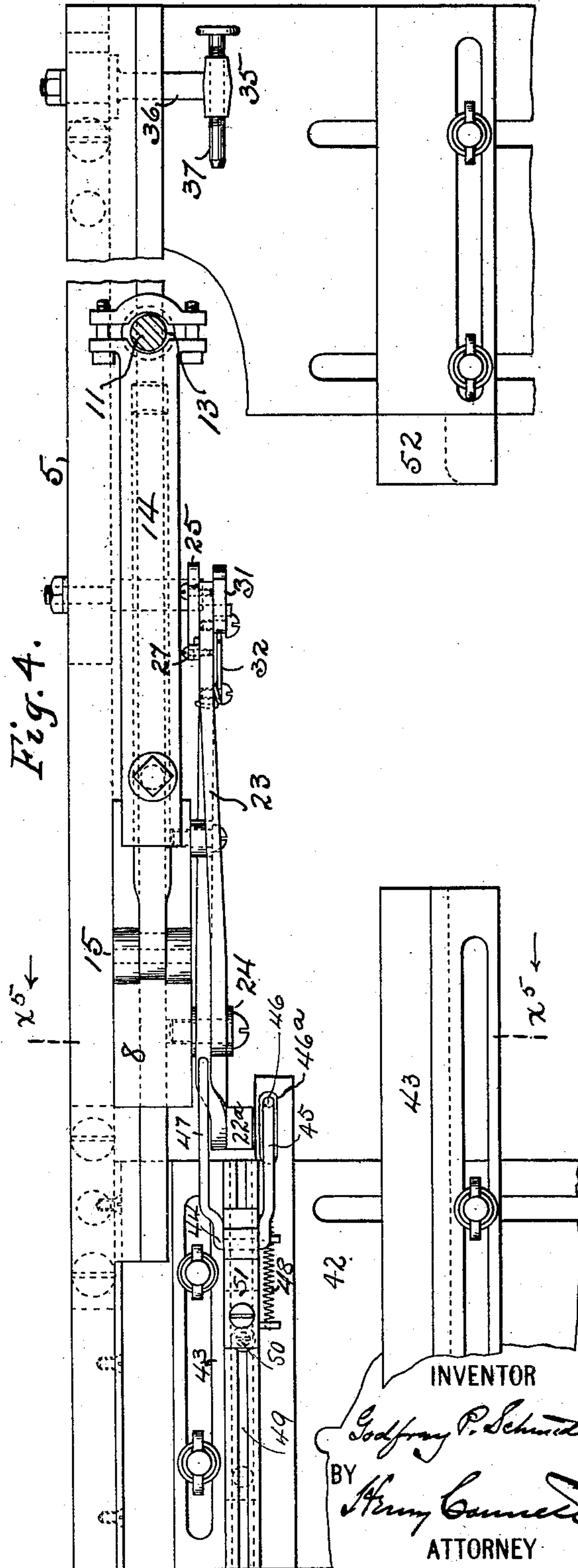


Fig. 4.

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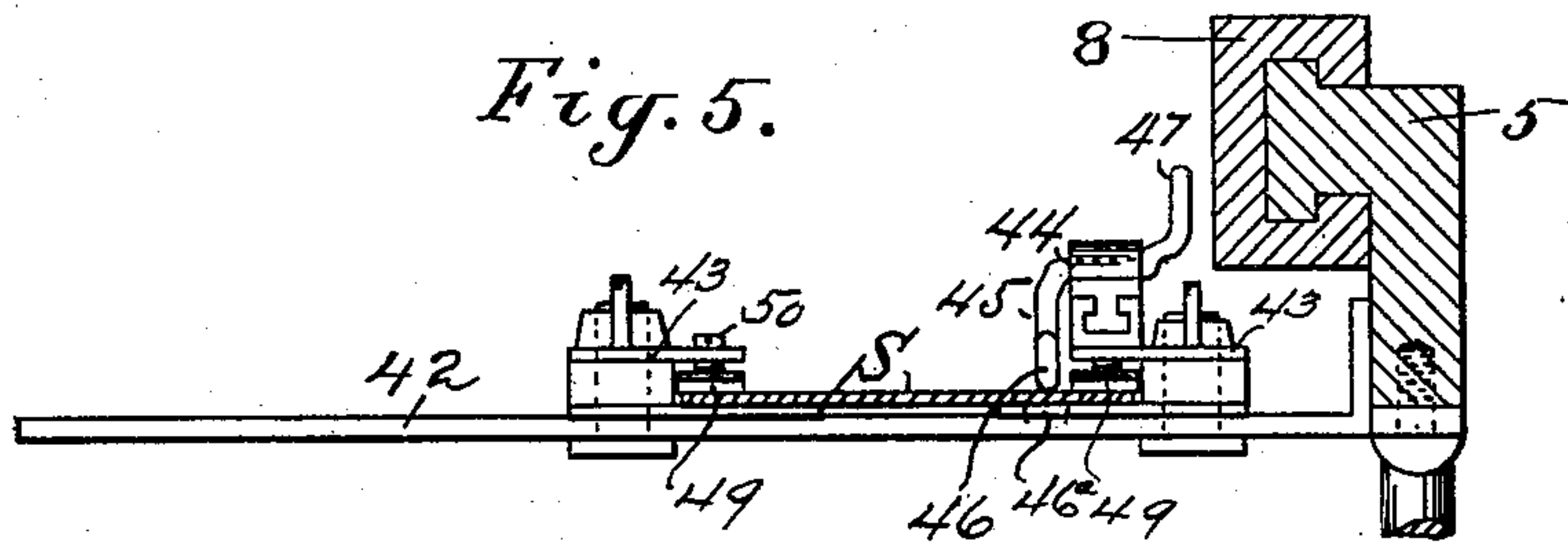
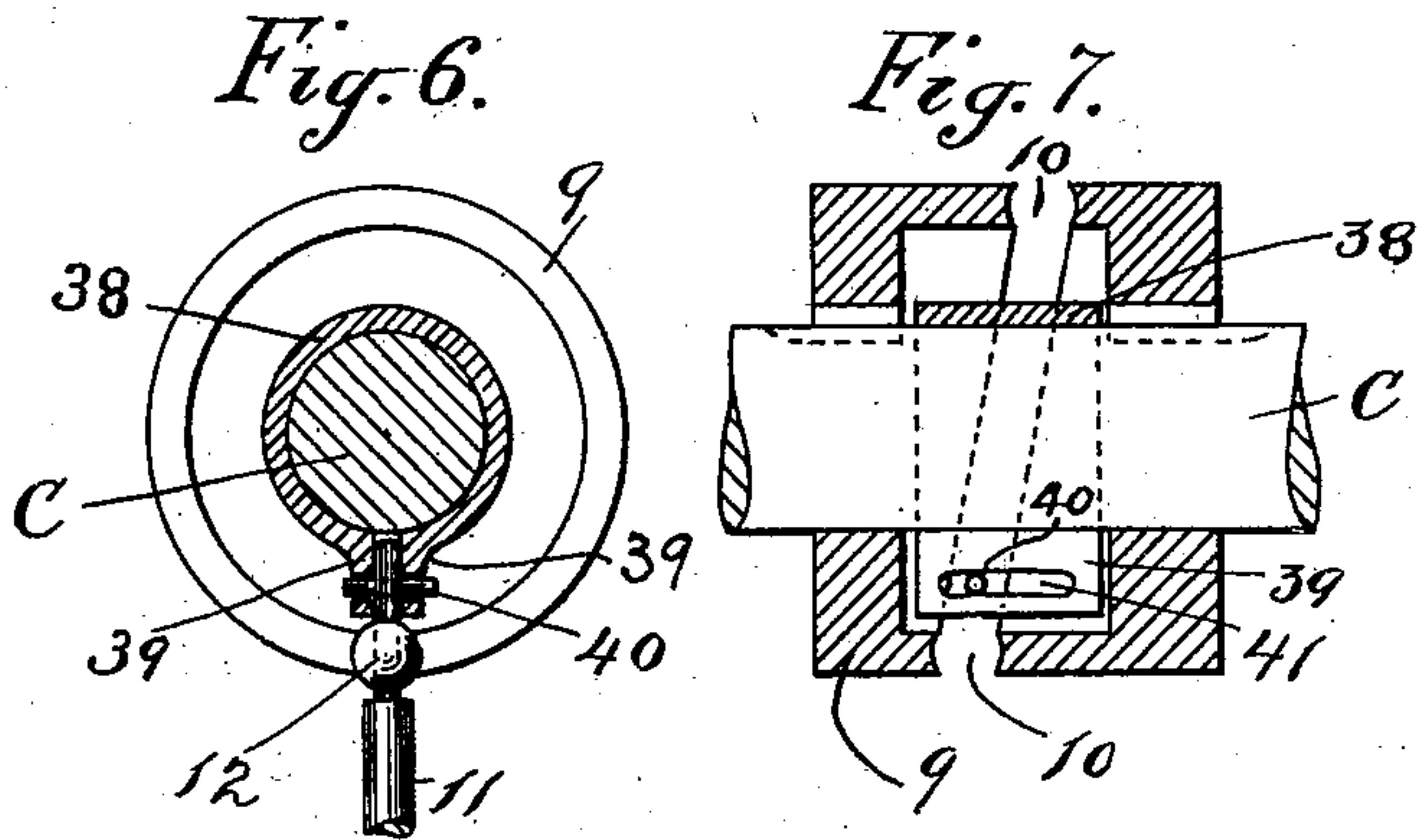
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AUTOMATIC FEEDING MECHANISM FOR STAMPING PRESSES OR THE LIKE.

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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC FEEDING MECHANISM FOR STAMPING-PRESSES OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 705,308, dated July 22, 1902.

Application filed November 2, 1901. Serial No. 80,867. (No model.)

To all whom it may concern:

Be it known that I, GODFREY P. SCHMIDT, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county

5 of Kings, and State of New York, have invented certain new and useful Improvements in Automatic Feeding Mechanisms for Stamping-Presses or the Like, of which the following is a specification.

10 This invention relates to automatic means for feeding sheet material to the stamps or dies of a press or to an embossing-press; and the object is to produce an effective and simple mechanism capable of accurate and variable adjustment to suit all the requirements

15 of such a press or machine.

In the drawings, which serve to illustrate an embodiment of the invention, Figure 1 is a side elevation of the upper part of a stamping-press with the feeding mechanism applied thereto, and Fig. 2 is a front elevation of the same. Fig. 3 is a sectional elevation of the feeding mechanism, on a larger scale, showing the rear or inner face thereof; and Fig.

20 4 is a plan view of the same. Fig. 5 is a transverse section of the mechanism, taken substantially at line x^5 in Fig. 4. Figs. 6 and 7 are sectional detail views of the operating-cam, the former being a cross-section and the

30 latter an axial section.

The press herein shown is one well known and it need only be briefly described.

A is the head of the press, supported on a suitable stand.

35 B is the bolster or bed.

C is the main arbor, rotatable in the head

A. D is the fly-wheel on said arbor.

E is the reciprocating die-carrier.

40 It is not important to my invention just how the details of the press are constructed and arranged. The press shown in Fig. 1 is known as a "Bliss" power-press.

The device which embodies my invention will be called herein a "feeder," and it comprises a sliding gripper, which seizes the sheet and draws it forward under the die, devices for opening and closing the jaws of the gripper, means for regulating or adjusting the said devices, so as to move the sheet to exactly the desired extent, means for imparting a reciprocating movement uniformly to the jaws at each operation of the press, and

means for limiting the extent to which the sheet can be inserted in the guides of the feeder by the attendant.

55 At the respective sides of the bolster of the press are mounted bearers 1. The bearer is slotted for adjustment forward and back on the bolster and is guided on and set fast by screws 2. At its front end the bearer has an upright socket 3. These bearers support the guide-bar 5 of the feeder, which has secured in it at the proper distance apart two upright pins or legs 6, which fit into the respective sockets 3 in the bearers. The lower ends

60 of the pins or legs are screw-threaded and on each is a nut 7, which rests on the top of the bearer, thus permitting the guide-bar to be adjusted up or down to suit the requirements. Mounted slidably on the guide-bar 5 is a carriage 8, which is reciprocated or moved to and fro horizontally over the guide-bar by means which will now be described.

On the main arbor C of the press, where it projects beyond the side of the press-head, is secured a hollow cam-cylinder 9, in which is an oblique cam-slot 10, Figs. 2 and 7. This cam-slot really cuts the hollow cylinder into like or similar parts, each of which is separately secured to the arbor. An operating-lever 11 has near its upper end a ball-journal 12, which takes in the slot 10, the cam-faces being made concave to fit the ball snugly. At its lower end the lever 11 has a universal joint or ball-journal 13, which couples the lever to the outer end of a connecting-rod 14, the other end of said rod being hinged or coupled at 15 to the carriage 8. The lever 11 is slidable in an eye 16, pivoted on a fulcrum-block 17, mounted slidably and adjustably in a slot 18 in an adjustable fulcrum-plate 19. This plate swings about the axis of the arbor C as a center, having a bearing hook or eye 20, which takes over and fits movably on the cam-cylinder 9, as clearly shown. The plate 19 is made adjustable to the vertical to suit the inclination of the lever 11 by a slotted arm or plate 19^a, which fits up to the side of the press-head and is secured in position by a screw 21.

Obviously from the above description rotation of the arbor C and with it the cam-cylinder 9 will impart through the lever 11 a uniform reciprocating motion to the carriage

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8 on the guide-bar, the extent of the movement being varied by shifting the fulcrum-block 17 up or down in the slot 18 and setting it fast when adjusted.

5 The carriage 8 carries the gripper, which comprises an upper jaw 22, which is fixed to said carriage, and a lower jaw 23, which is fulcrumed at 24 on the carriage. The heads 22^a and 23^a of these jaws project out laterally, 10 so as to embrace the edge of the sheet S, which is to be fed to the die, and when the gripper is open these heads play over the sheet, but when closed they grip it and draw it along as the carriage 8 moves.

15 The means for opening and closing the gripper by a movement of the jaw 23 about its fulcrum will now be described with especial reference to Figs. 3 and 4. The jaws cross, and as a consequence the shank or handle of 20 the lever-like jaw 23 is above, as seen at the right in Fig. 3. For opening the jaws by depressing the head of the lower jaw there is an elbow-lever 25, fulcrumed at 26 on the fixed jaw 22, and coupled to it is a draw bar 25 or link 27, which is coupled to the shank of the movable jaw. When the carriage 8 moves 25 back or out with the gripper open, at a predetermined point the pendent arm of the elbow-lever 25 strikes a stud 28 on the guide- 30 bar in its path, and this stud rocks the lever and actuates the jaw 22 through the draw-bar to close the gripper on the sheet S. Preferably the stud 28 is mounted adjustably in a slot 29 in the guide-bar, so that the gripper 35 may be set to close at any point desired. When the shank of the jaw 23 is drawn down, it compresses a gripper-opening spring 30, and the jaws are held closed by a spring-latch 31, backed by a suitable spring 32. This 40 latch is pivoted below to the shank of the fixed jaw 22 and has a shoulder at 33 to take over a projection or stud 34 on the shank of the jaw 23. The latch 31 has an upwardly-extending arm 31^a, which impinges when the 45 gripper shall have drawn the plate 8 forward to a predetermined extent under the die of the press on an adjustable stop 35, mounted on the guide-bar 5. Preferably this stop will be a micrometer-screw device, (best seen in 50 Fig. 3,) and comprising a support 36, adjustably mounted on the guide-bar 5, and micrometer-screw 37 in said support, whereby an accurate adjustment may be effected for opening the gripper at the instant and point 55 desired.

The operating-lever 11 has, as before stated, a ball-journal at its lower end, and as this lever plays freely through the eye 16 therefore the weight of said lever would be thrown on 60 said journal under normal conditions. To obviate this and to take the weight off the ball, means are provided, which will now be described.

Loosely embracing the main arbor C with- 65 in the hollow of the cam-cylinder 9 is a sleeve 38, which is slit longitudinally along its lower side (see Fig. 6) and has projecting longitu-

dinal cheeks 39 along said slot. The upper end of the lever 11 plays in this slit or way 70 between said cheeks, and a pin 40, extending through this end of said lever, has bearings at its ends in curved slots 41 in the said cheeks. The ends of said pin take the weight 75 of the lever off from the ball journal or journals of the lever.

Connected rigidly to the guide-bar 5 at the 75 left in Fig. 4 is the guide and support for the plate 8 to be fed. This feature comprises substantially a horizontal supporting-plate 42, having on it lateral guides 43 for the sheet. 80 On the outer lateral guide is mounted the stop for limiting the extent to which the sheet S may be inserted by the attendant primarily. This device comprises in substance a rock- 85 shaft 44 and an arm 45 on said shaft, having a nose 46, which normally drops into a slot or recess 46^a in the plate below and serves as the limiting-stop to prevent the sheet S from being advanced beyond it. On said 90 shaft 44 is also a releasing-arm 47, which extends forward in the path of the convex portion of the fixed jaw 22 of the gripper, whereby when the latter advances to seize the sheet the said convex or cam surface on the grip- 95 per-jaw takes under the arm 47 and by raising it and rocking the shaft 44 lifts the nose 46 out of the slot or recess 46^a, so that the sheet S may pass under said nose. This feature is best illustrated in Figs. 3 and 4, which 100 show the gripper advanced and the jaws just closed on the sheet.

The connecting-rod 14 will be preferably constructed in the same manner, so that it may be elongated. As herein shown, one 105 member of it telescopes within the other and is secured by an ordinary set-screw when adjusted. This adjustment, together with the adjustment of the bearers 1, the sliding block 17, and the swinging fulcrum-plate 19, enables 110 the feeder to be adjusted and fitted to operate on presses of various kinds and sizes. Obviously any mode of mounting the block 17 adjustably on the fulcrum plate or support may be adopted. Slotting said plate is 115 a convenient mode, but not a necessary one. So long as proper guides for the block are supplied the construction is not important. The special form of the guide-bar 5 is also un- 120 important. It provides a trackway for the gripper-carriage 8, and so long as it performs this service properly it will come within the scope of the present invention.

There may be a spring 48 to hold the arm 45 down, or gravity may be relied on for this 125 purpose. To provide a slight tension on the sheet S as it is drawn along by the feeder, the device seen best in Fig. 3 or some equivalent device may be used. The device shown 130 comprises a leaf-spring 49, mounted in the groove of the side guide 43, so as to bear one end on the moving sheet and a screw 50, driven down through the guide and adapted to bear on the back of the spring, as clearly shown.

The rock-shaft 44 will be by preference mounted in a sliding piece 51, adjustably mounted in one of the side guides. This enables the stop 46 to be set at different points at will.

At the right in Fig. 4 is seen a guide 52 for the punched or embossed sheet as it leaves the press.

Having thus described my invention, I claim—

1. In a feeder for sheet material to a press, the combination with a reciprocating gripper device for seizing and drawing in the sheet, and means for opening and closing said gripper, of a cam on an arbor of the press, an operating-lever actuated by said cam and coupled to the gripper-carriage, and means for adjusting the fulcrum of said lever for varying the extent of movements of the gripper-carriage with a constant-operating cam.

2. In a feeder for sheet material to a press, the combination with a reciprocating gripper device for seizing and drawing in the sheet, and means for opening and closing said gripper, of a grooved operating-cam on an arbor of the press, a lever having a bearing at one end in the groove of said cam, and a universal-joint connection with an arm on the gripper-carriage, the said arm, a slotted fulcrum-plate adjustable radially about the operating-cam, a fulcrum-block mounted adjustably in the said slotted plate, and an eye on said block which forms a bearing for the operating-lever.

3. In a device for the purpose set forth the combination with a gripper, its carriage, the trackway for said carriage, and the hollow, slotted operating-cam on the arbor of the press, of the operating-lever 11, the adjustable fulcrum-block therefor, the eye on said block through which the lever plays, the slotted sleeve 38 on the arbor within the cam, the pin 40 in the lever, engaging the curved slot in the cam.

4. In a device for the purpose set forth, the combination with the adjustably-mounted guide-bar, the gripper-carriage slidably mounted thereon, and means for imparting a reciprocating movement to said carriage, of the fixed gripper-jaw on said carriage, the movable gripper-jaw on said carriage, the spring-latch 31, adapted to engage the movable gripper-jaw and hold it closed, the closing-lever 25, the draw-bar coupling this lever to the movable jaw, an adjustable stud for actuating said closing-lever, an adjustable detent for actuating the spring-latch to unlock it, and the gripper-opening spring.

5. In a feeding device for the purpose set forth, the combination with a reciprocating gripper device for drawing in the sheet, and automatic means for operating said gripper device to open and close its jaws, of a guide for the sheet to be fed, and an automatic limiting-stop device for the sheet whereby the latter can only be fed in by hand to a certain point.

6. In a feeding device for the purpose set forth, the combination with a reciprocating gripper device for drawing in the sheet, and automatic means for operating said gripper device to open and close its jaws, of a guide for the sheet to be fed, and an automatic limiting-stop device for the sheet, said device comprising a rock-shaft 44 over said guide, the stop-arm 45 on said shaft and having a nose 46 to engage a recess in the bottom plate of the guide, and the releasing-arm 47 on said shaft, the end of which arm is in the path of a part of the gripper, whereby the shaft is rocked by the gripper when the latter moves out to grip the sheet.

7. In a device for the purpose specified, the combination with the bearers 1, having each a socket 3, of the supporting guide-bar 5, provided with screw-threaded pins 6, to engage the sockets 3, and nuts 7 to rest on the said sockets for vertical adjustment of the bar 5.

8. In a device for the purpose specified, the combination with a movable gripper device for feeding the sheet, and the rotating cam 9, of the slotted fulcrum-plate 19, having a bearing 20 on the said cam and a slotted arm 19^a, the fulcrum-block 17, mounted in the slot in the plate 19 and provided with an eye 16, and the operating-lever 11, connected below to the gripper device and engaging the cam 9 at its upper end.

In witness whereof I have hereunto signed my name, this 12th day of October, 1901, in the presence of two subscribing witnesses.

GODFREY P. SCHMIDT.

Witnesses:

HENRY CONNETT,
PETER A. ROSS.