

(Model.)

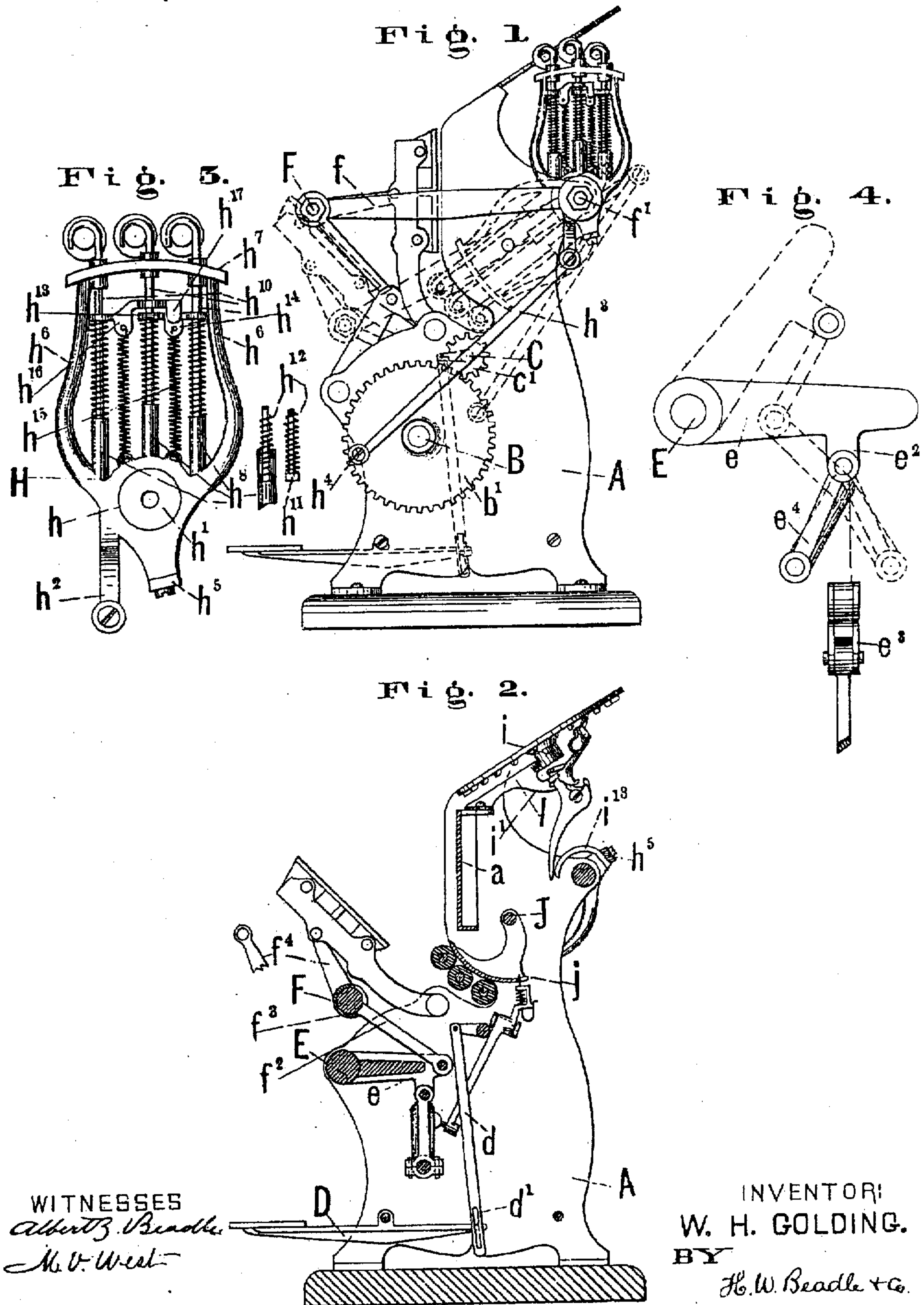
3 Sheets—Sheet 1.

W. H. GOLDING.

PRINTING PRESS.

No. 256,891.

Patented Apr. 25, 1882.



WITNESSES
Albert B. Braddock
M. V. West

INVENTOR:
W. H. GOLDING.
BY
H. W. Beadle & Co.
ATTYS

(Model.)

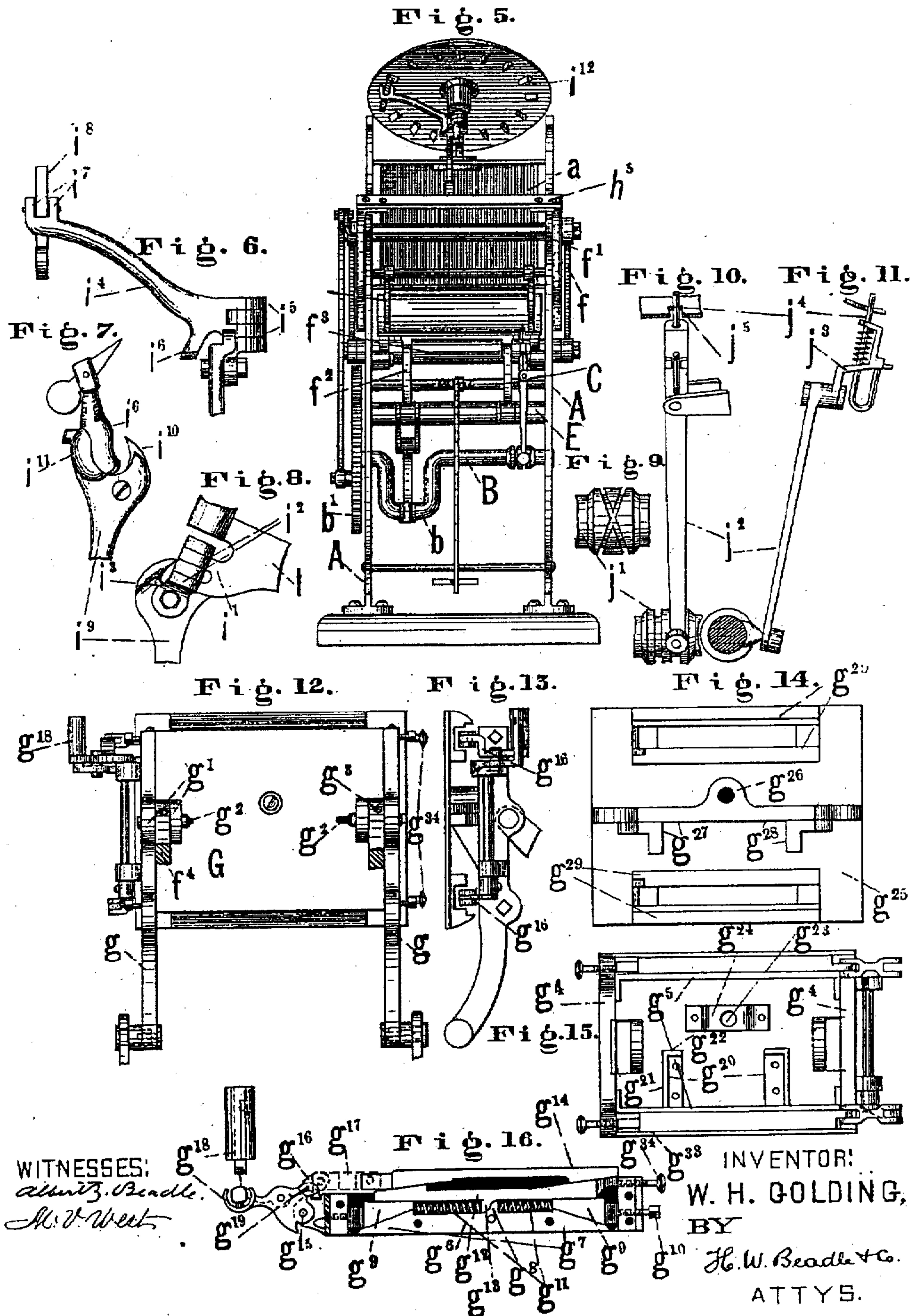
3 Sheets—Sheet 2.

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(Model.)

3 Sheets—Sheet 3.

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Fig. 17.

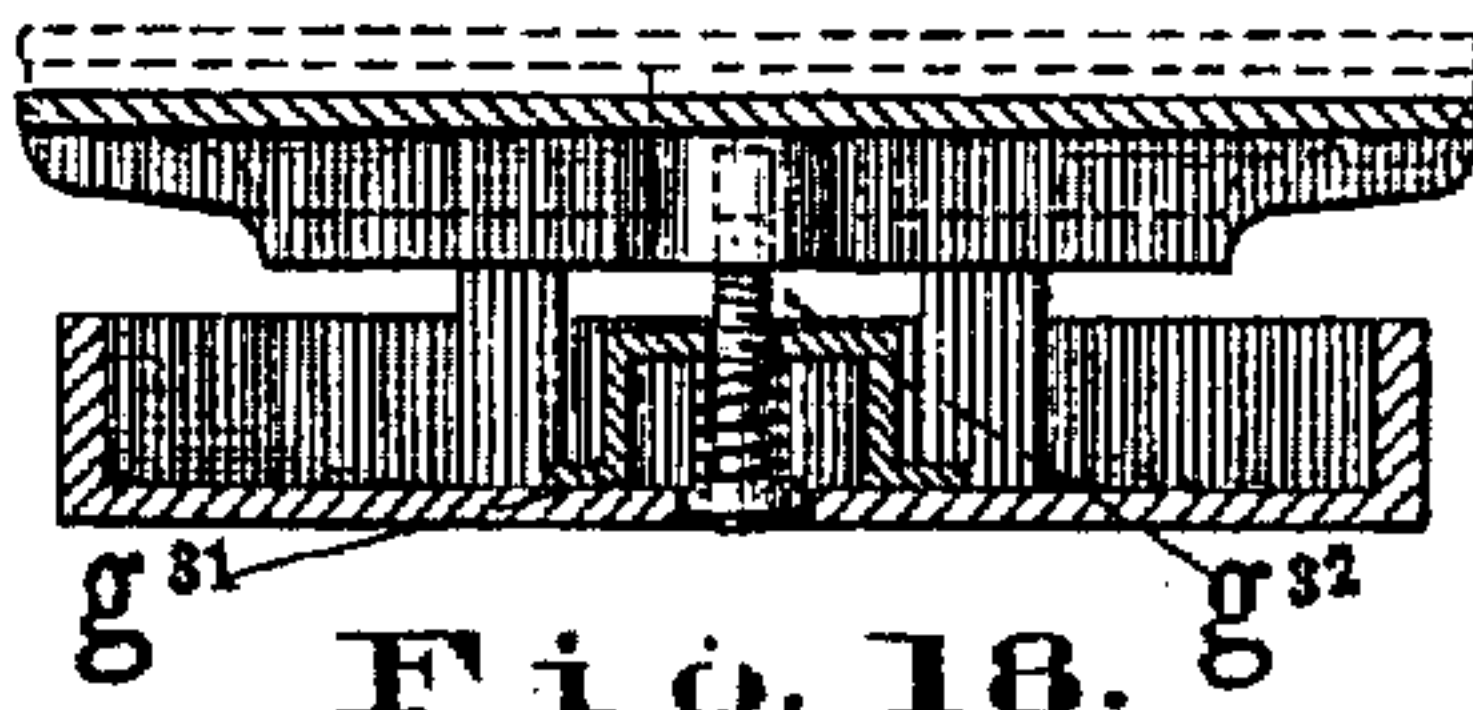


Fig. 18.

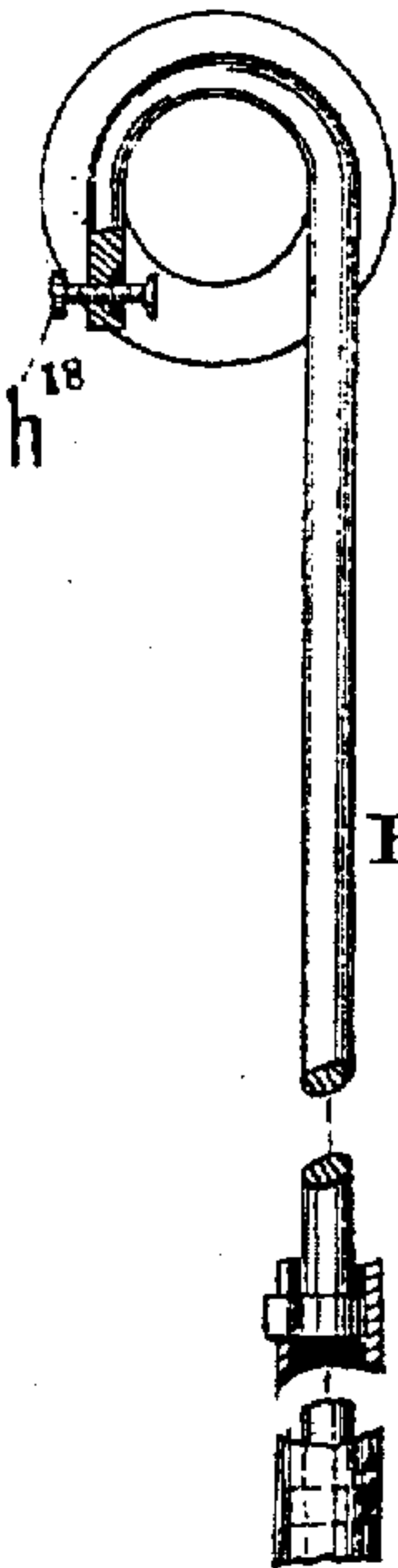


Fig. 23.

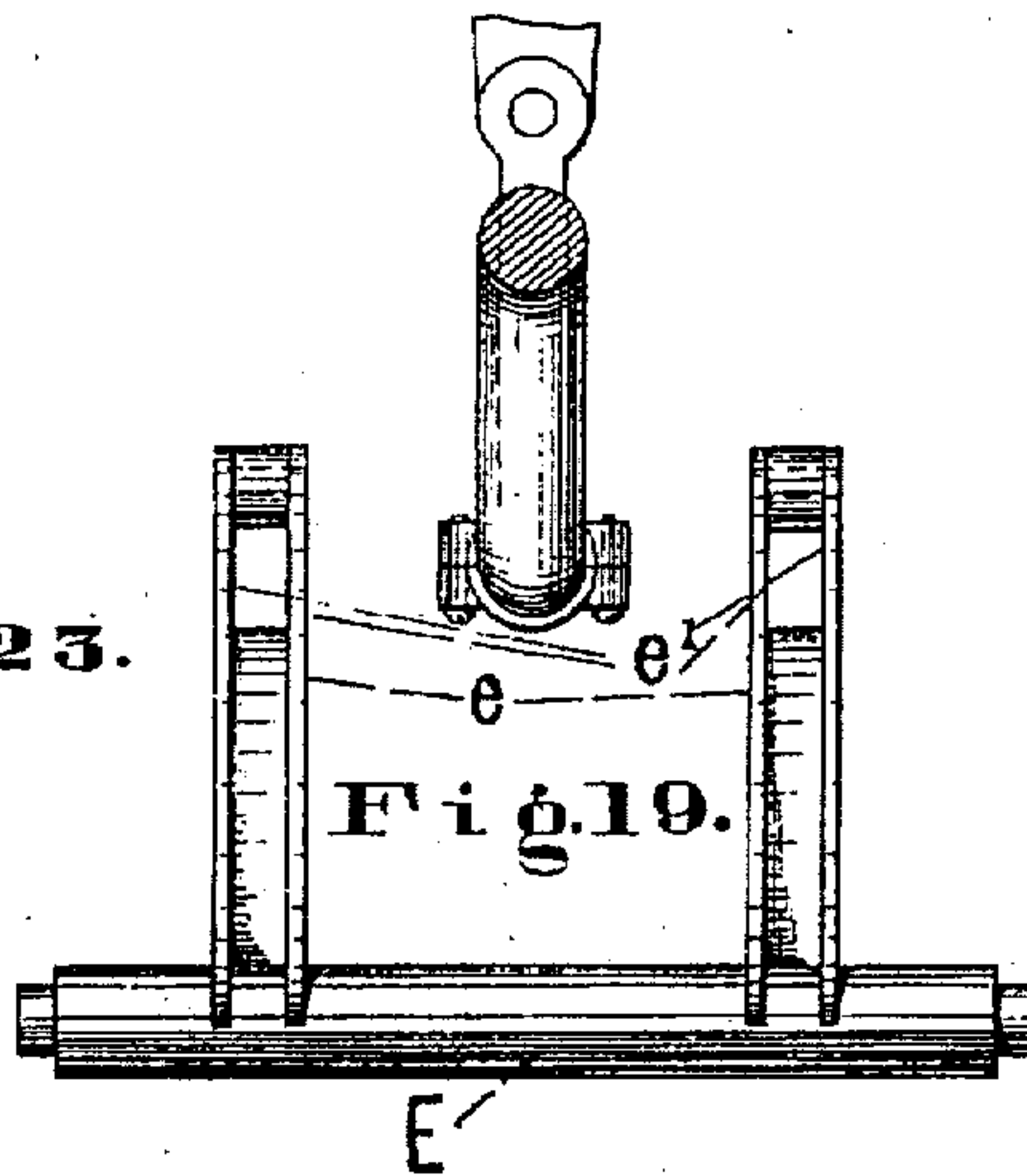


Fig. 19.

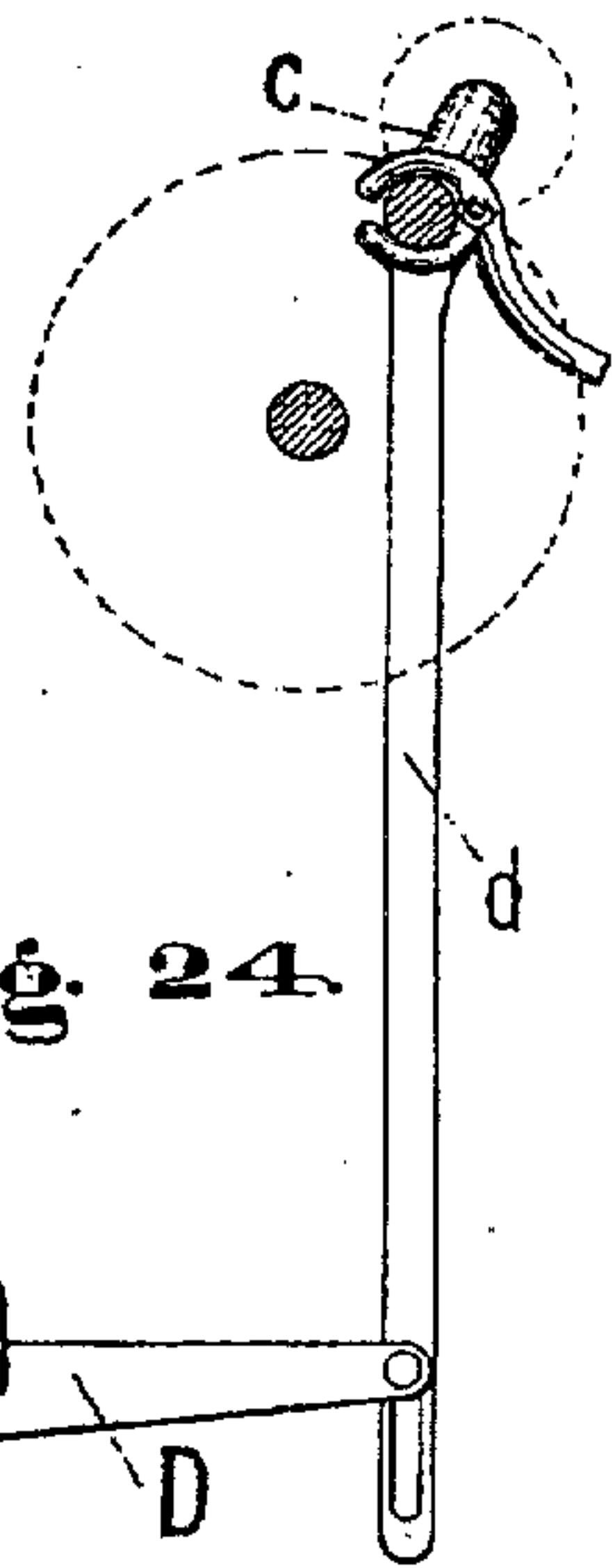


Fig. 24.

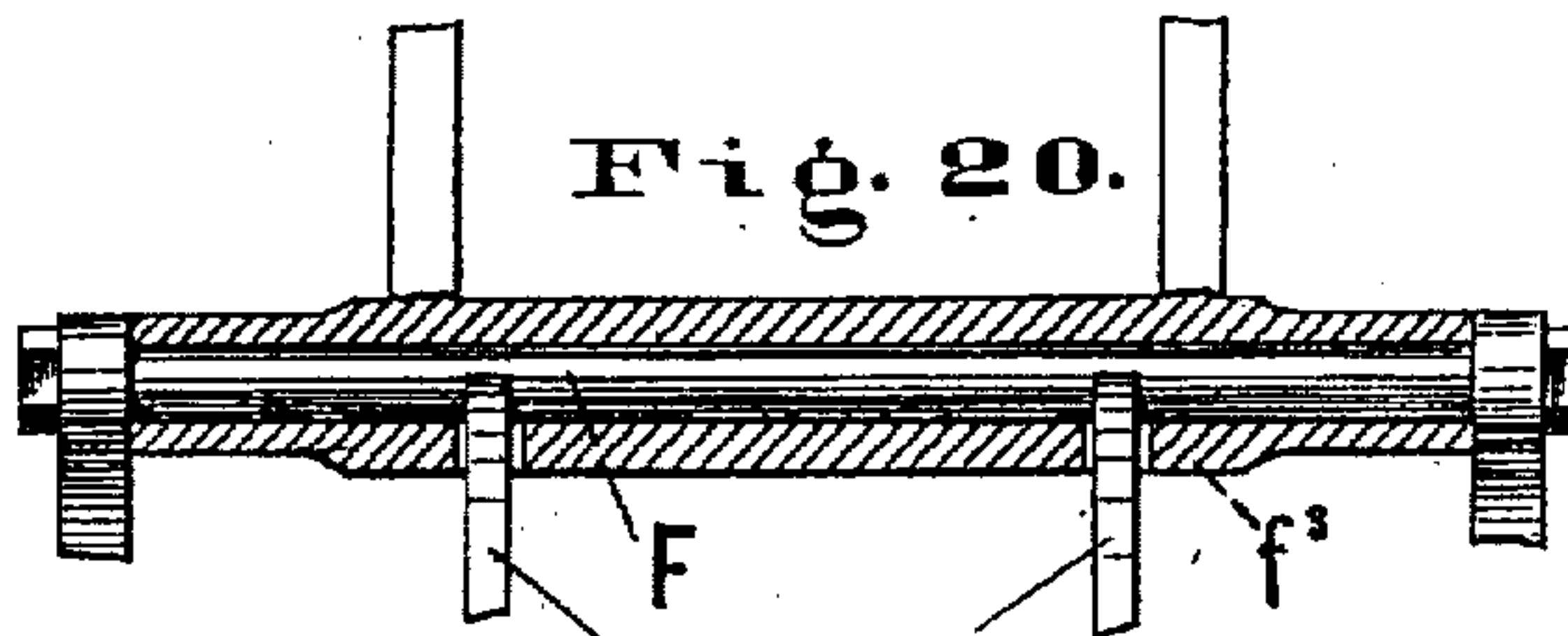


Fig. 20.

Fig. 21.

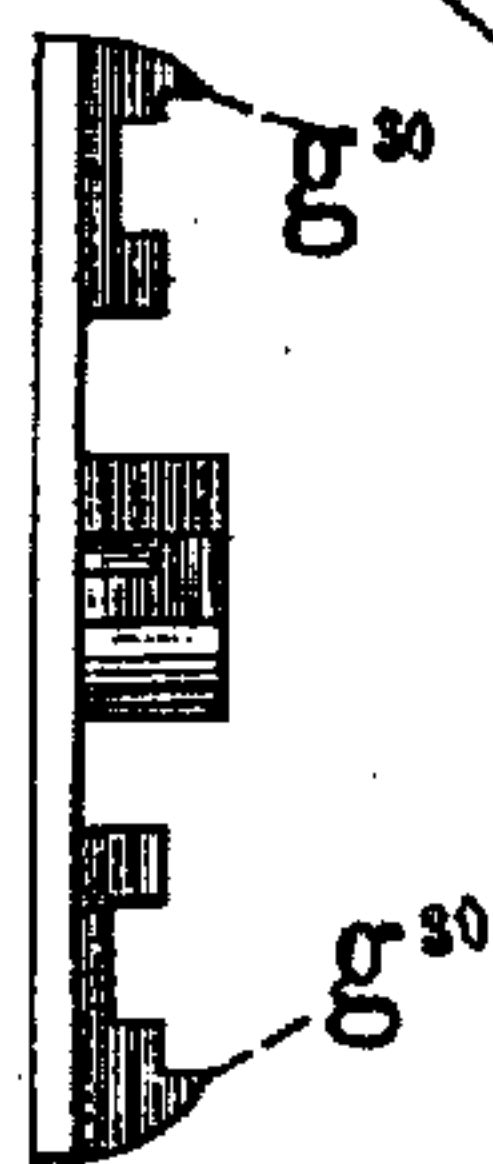
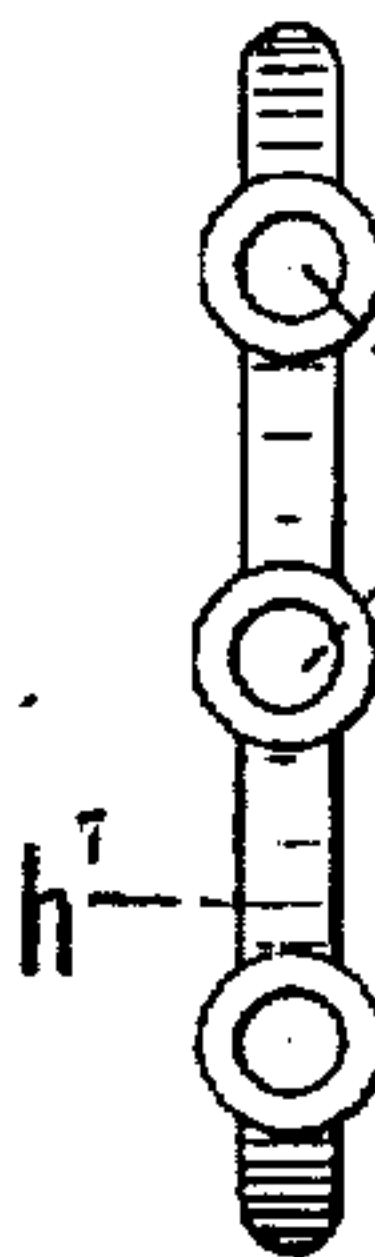


Fig. 22.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM H. GOLDING, OF CHELSEA, MASSACHUSETTS.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 256,891, dated April 25, 1882.

Application filed March 20, 1880. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GOLDING, of the city of Chelsea, county of Suffolk, and State of Massachusetts, have invented new and useful Improvements in Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention consists mainly, first, in the special construction of the mechanism employed for communicating movement from the main shaft to the platen, the connection of the parts being such that the platen is caused to receive from the uniform revolution of the main shaft a reciprocating movement, which has an interval of rest when the platen is in position to receive the sheet; second, in the special construction of the mechanism for adjusting the platen to the face of the bed and also for throwing off the impression; third, in the special construction of the inking-frame; and fourth, in the combination of an ink-distributor located beneath the bed, with certain other parts, as will be fully described hereinafter.

It consists, further, in certain special details of construction, which, in connection with the foregoing, will be fully described hereinafter.

In the drawings, Figure 1 represents a side elevation of my improved press; Fig. 2, a vertical sectional elevation of the same; Fig. 3, a detached view of the ink-frame enlarged; Fig. 4, a detached view of the main crank and its connections; Fig. 5, a rear elevation of the press complete; Figs. 6, 7, and 8, detail views of the mechanism for actuating the ink-disk; Figs. 9, 10, and 11, detail views of the mechanism for giving the lower ink-distributor its longitudinal movement; Figs. 12, 13, 14, 15, and 16, various views of the platen; Fig. 17, a transverse sectional elevation of the platen and base-plate; Fig. 18, an enlarged view of the crank *b* and connecting-rod *c*¹; Fig. 19, an enlarged view of the shaft *E*, with its arms *e*; Fig. 20, an enlarged view of the shaft *F*; Fig. 21, an end elevation of the platen; Fig. 22, a plan view of the bar *h*¹; Fig. 23, an enlarged view of one of the hook-rods for holding the ink-rollers, and Fig. 24 an enlarged view of the crank mechanism for actuating the press.

To enable others skilled in the art to make and use my improved press, I will now proceed to describe fully its construction and operation.

For convenience and clearness the same will be described under several heads, as follows: First, the mechanism employed for communicating movement from the main shaft to the platen; second, the mechanism for adjusting the platen to the face of the bed and also for throwing off the impression; third, the ink-frame and the mechanism for giving movement to the same; fourth, the mechanism for giving movement to the ink-disk; fifth, the ink-distributor under the bed, and the mechanism for giving the same a double movement.

I. *The mechanism employed for communicating movement from the main shaft to the platen.*—A A, Figs. 1, 2, and 5, represent vertical side plates or standards, which are supported below by any suitable base or foundation, and are united above by means of the vertical bed-plate *a*, Figs. 2 and 5, as shown.

B, Figs. 1 and 5, represents the main shaft, suitably held by proper bearings in the side plates, which is provided near one end, upon the inner side of the standard, with the crank *b*, Fig. 5, of the usual well-known construction, and at one end, upon the outer side of the standard, with a gear-wheel, *b*¹, Figs. 1 and 5, as shown.

C, Figs. 1 and 5, represents an auxiliary shaft, suitably held by proper bearings in the side plates, which is provided upon the inner side of the standards with a crank, *c*, Fig. 24, and upon the outer side of the standard with a pinion, *c*¹, Fig. 1, engaging with the gear-wheel *b*¹, as shown.

D, Figs. 2 and 24, represents a treadle of any proper construction, and *d* a connecting-rod having a slot, at *d*¹, at one end and a spring-clamp or other proper means of connection at the other. By means of the connecting-rod the treadle is united to the auxiliary shaft for the purpose of giving movement thereto.

E, Figs. 2, 4, 5, and 19, represents a shaft suitably held by proper bearings in the side plates, which is provided with the arms *e e*, extending therefrom, as shown, these arms themselves being provided with the ends *e*¹, Fig.

10, having openings, as shown; and e^2 , Fig. 4, represents a right-angled extension, having ends e^3 , with openings, as shown.

5 e^4 represents a connecting-rod of any proper construction, by means of which the crank of the main shaft is united to the extension e^2 of the arm e , as shown.

10 F , Figs. 1, 2, and 20, represents a rod or shaft suitably held by proper bearings in the free ends of the bars $f f$, Fig. 1, which bars are themselves held at their fixed ends by the shaft f^1 , extending across the machine at the rear upper corner of the same, as shown.

15 $f^2 f^2$, Figs. 2 and 5, represent connecting-rods, by means of which the shaft F is united to the ends of the arms e .

20 f^3 , Figs. 2 and 20, represents a hollow shaft inclosing the solid shaft F , which is provided, first, with proper openings for the projection of the ends of the connecting-rods f^2 through it to the shaft F , and, second, with arms $f^4 f^4$, Fig. 2, having openings in the end, as shown.

25 G , Fig. 12, represents the base-plate of the platen having the supporting-arms $g g$, by means of which and proper securing devices it is hinged or pivoted to the side plates, as shown.

30 $g^1 g^1$ represent ears, and $g^2 g^2$ bolts or pins, by means of which the arms $f^4 f^4$ are pivoted to the platen.

g^3 represents a fastening-screw, by means of which the pin g^2 is held against accidental displacement.

35 The operation of these parts is substantially as follows: Movement having been communicated to the main shaft in any proper manner, the platen receives therefrom, through the intermediate mechanism described, an oscillating movement. At the end of the return
40 movement of the platen, after making an impression, it has an interval of rest. This results mainly from the construction of the connecting-rod e^4 , Fig. 4, and its arrangement relatively to the crank of the main shaft. The
45 connecting-rod e^4 , it will be observed, is made nearly of the same length as the crank of the main shaft, and is so united thereto that when the crank is in its lowest position, as shown in Figs. 5 and 18, the center of movement of the
50 upper end of the connecting-rod is nearly coincident with the center of movement of the main shaft. From this construction and arrangement it follows, when the parts are in this position, that the continued movement of
55 the crank will give to the connecting-rod simply a swinging movement upon the pin or bolt which unites it to the extension e^2 , as indicated in Fig. 4, without lifting the extension of the shaft E in a vertical direction. The exact
60 coincidence of the crank and the connecting-rod in their movement continues only while the two lie in the same vertical plane; but as in approaching and leaving this line the vertical movement of the rod is necessarily small,
65 it follows that a sufficient interval of rest is

obtained for the purpose desired. The vertical movement of the connecting-rod, resulting from the revolution of the main shaft, is communicated to the extension of the shaft E , Fig. 2, and the latter being swung upon the
70 bearings, the connecting-rods $f^2 f^2$ are caused to lift the shaft F , supported by the swinging arms $f f$, as shown. By the elevation of the shaft F the arms f^4 of the hollow shaft f^3 are caused to swing back the hinged platen G
75 against the bed. The arms of the shaft E and connecting-rods f^2 act together in the manner of a toggle-joint. By the action of this toggle movement the shaft F , held by the swinging arms $f f$, is caused to describe the
80 arc of a circle and to force backward in its upward movement the hinged platen by means of the arms f^4 .

II. *The mechanism for adjusting the platen to the face of the bed and also for throwing off the*
85 *impression.*— G , Fig. 12, represents the base-plate of the platen, before referred to; $g^4 g^4$, Fig. 15, walls located on the sides of the inner face of the base-plate, and $g^5 g^5$ walls located
90 near the top and bottom edge of the same.

g^6 , Fig. 16, represents ledges on the outside of the walls g^5 , which are provided with the end portions, g^7 , inclined as shown, and the projection g^8 , as shown.

95 $g^9 g^9$ represent wedge-blocks having above a horizontal bearing face, and below an inclined bearing face adapted to rest upon the end portion, g^7 , as shown.

100 g^{10} represents an adjusting-screw located at the proper point in the side wall, by means of which the wedge-block may be advanced upon its inclined seat when it is desired to elevate its horizontal bearing-face.

105 g^{11} represents a spring interposed between the inner end of the wedge-block and the projections g^8 or the projection g^{13} , hereinafter referred to.

110 g^{12} represents a bar adapted in form and size to rest upon the horizontal bearing-faces of the wedge-blocks, as shown, which is provided upon the upper side, at each end, with an inclined bearing-face and upon its lower side with a projection, g^{13} , as shown. g^{14} also
115 represents a bar precisely like the bar g^{12} , excepting that it is without the projection g^{13} , which bar, when in position, lies with its inclined bearing-faces in contact with the corresponding faces of the bar g^{12} , as shown.

120 g^{15} represents a shaft held by proper bearings upon one of the side walls of the base-plate, which is provided with crank-arms g^{16} , Figs. 13 and 16, having links g^{17} , Fig. 16, secured to the outer ends of the bars g^{14} , as shown.

125 g^{18} represents a crank-handle, by means of which the shaft g^{15} is partially revolved, when desired, for the purpose of giving longitudinal movement to the bars g^{14} , as will be hereinafter described.

130 g^{19} , Fig. 16, represents a spring-latch, by

means of which the shaft g^{15} and the attached bars g^{14} may be locked in their normal position when desired.

$g^{20}g^{20}$, Fig. 15, represent right-angled plates projecting from the base-plate, having bearing-faces $g^{21}g^{22}$, as shown.

g^{23} , Fig. 15, represents a small opening in the bracket-plate g^{24} , which is in line over a larger opening in the base plate, as shown in Fig. 17.

g^{25} , Fig. 14, represents the face-plate of the platen, the inner side of which is provided with the threaded socket-piece g^{26} , the walls g^{27} and g^{28} , and the bearing-ribs g^{29} , the outer ones of which latter are provided with the flange g^{30} , as shown in Fig. 21.

g^{32} , Fig. 17, represents a screw which extends through the base-plate into the socket-piece of the face-plate, as shown.

g^{31} represents an intermediate spring bearing at one end against the head of the screw and at the other upon the bracket-plate, as shown. When the face-plate is in place the faces $g^{21}g^{22}$ of the plate g^{20} bear against the walls $g^{27}g^{28}$, by means of which construction the lateral and longitudinal position of the face-plate relatively to the base-plate is accurately determined.

g^{33} , Fig. 15, represents a face-plate by means of which the wedge-blocks and parts are properly covered.

g^{34} represents a screw by means of which the bar g^{12} may be moved independently of the other parts, in order that the platen may be adjusted at the top and bottom, when desired, for the purpose of regulating the impression.

The operation of these parts is readily understood. The manner of adjusting the platen is as follows: The face-plate of the platen is adjusted to the face of the bed by simply turning any one of or all of the screws g^{10} in the proper direction, in consequence of which each wedge-block g^9 is either moved up the inclined portions g^7 by the direct action of the screw, when the same is moved in a forward direction, or is moved down the inclined portions by the reaction of the spring g^{11} when the same is moved in a rearward direction. After the platen is adjusted so that it is perfectly true with the face of the bed it is seldom necessary to change the position of the wedge-blocks g^9 . The two hand-screws g^{34} , controlling the movement of the double wedge-block g^{13} , are used to regulate the amount of impression upon the type. By these connected wedges the top and bottom lines of the platen are kept perfectly parallel with the bed, and the impression can therefore be changed quickly for small or large forms and the varying thicknesses of paper and card-board. From this action it follows that the face-plate of the platen is moved either to or from the base-plate, according to the circumstances of the case, the first movement or movement toward the base-plate being permitted by the yielding of the spring g^{31} ,

and the second movement or movement from the base-plate being caused by the reaction of the same spring whenever the same is free to act.

The manner of throwing off the impression is substantially as follows: The parts being in their normal position, so that the platen occupies the position shown in dotted lines, Fig. 17, the impression is thrown off by forcing down the crank-handle g^{18} , Fig. 12, the spring-latch g^{19} , Fig. 16, having been first disengaged, by which means the shaft g^{15} is partially revolved, and the bars g^{14} , attached thereto, are drawn along upon the bars g^{12} . The inclined portions of the bars g^{14} being thus moved down the inclined portions of the bars g^{12} , the face-plate of the platen is drawn near to the base-plate by the reaction of spring g^{31} , Fig. 17. The face-plate of the platen having thus been set back, it follows that the same will not come in contact with the type upon the bed when swung backward by the mechanism previously described, and hence no impression will be made. By a reverse movement of the shaft g^{15} the platen is moved out from its base-plate far enough to come in contact with the type upon the bed for the purpose of receiving an impression therefrom.

III. *The ink-frame and the mechanism for giving movement to the same.*—H, Fig. 3, represents the ink-frame having a bearing-opening, h , through which the fixed bearing hubs or journals h' project from the side plates, as shown.

h^2 represents an arm projecting from the frame, and h^3 , Fig. 1, a connecting-rod, by means of which this arm is united to a crank-pin, h^4 , upon the main gear-wheel.

h^5 , Figs. 3 and 5, represents an intermediate connecting-bar, by means of which the rear ends of the ink-frame are united together.

h^6h^6 , Fig. 3, represent side bars rising from the base portion of the frame, which are united above by the cross-bar h^7 , as shown.

h^8h^8 represent hollow studs rising from the base portion, the openings into which are in line below certain openings, h^9 , Fig. 22, in the cross-bar h^7 , as shown.

$h^{10}h^{10}$ represent the hook-rods for holding the rollers in place, the upper ends of which extend through the openings h^9 in the cross-bar h^7 , and the lower ends of which extend into the opening of the studs h^8h^8 , as shown.

h^{11} represents a collar or shoulder upon the lower end of each rod h^{10} , and h^{12} a spring inclosing the rod, the lower end of which bears upon the collar h^{11} , as shown. These collars or shoulders have guide-projections, as shown in Fig. 23, which move in proper pockets or recesses, by means of which construction the rods are absolutely held from turning out of place.

h^{13} represents a bar having openings at its ends, through which extend the hook-rods, as shown, which bar is provided with a central eye, h^{14} , or other proper means for securing

the upper end of the spring h^{15} , the lower end of which is secured to the base portion of the frame, as shown.

h^{16} represents a similar bar, which is provided, in addition, with an extension, h^{17} , projecting over the bar h^{13} , as shown.

If desired, the upper end of the hook-rod may be provided with a non-removable screw, h^{18} , as shown in Fig. 23, for holding the end of the ink-roller and preventing absolutely its accidental escape.

The operation of these parts is substantially as follows: The ink-frame, as a whole, receives an oscillating movement from the revolution of the main gear-wheel through the intermediate mechanism described. The rollers, by means of the hook-rods and springs, are held with an elastic pressure. By means of the bars h^{13} and h^{16} the power of the auxiliary spring h^{15} is added to that of the main spring h^{12} , and consequently a more uniform tension is obtained.

IV. *The mechanism for giving movement to the ink-disk.*—I, Fig. 2, represents a bracket or standard extending upward and rearward from the upper edge of the base-plate, which is provided, first, with a sleeve, i , adapted to receive and hold the central stud or pin of the ink-disk; second, with the extension i' , Fig. 8, having ears i'' with openings through them; and, third, with an extension i'' , with an opening through the same.

i^1 , Fig. 6, represents an arm provided at one end with ears i^2 , having openings through them, and a cam-projection, i^5 , as shown, and at the other end with ears i^7 , supporting the weighted pawl i^8 , as shown. A pin extends through the openings in the ears i^2 for the purpose of uniting the arm i^1 to the bracket I, Figs. 2 and 8, as shown.

i^9 , Figs. 7 and 8, represents an arm having at one end a proper opening adapted to receive a bolt or pin, by means of which it is united to the ear i^7 , Fig. 8, of the standard I, an arm, i^{10} , and a cam-projection, i^{11} , as shown.

i^{12} , Fig. 5, represents an ink-disk having on its lower face a central stud or pin fitting into the sleeve i , Fig. 2, of bracket I, and ratchet-teeth located near the periphery of the same, Figs. 2 and 5, as shown.

i^{13} represents an arm upon the cross-bar h^5 of the ink-frame.

The operation of these parts is substantially as follows: The ink-frame having received its oscillating motion in the manner previously described, the arm i^{13} of its cross-bar is caused, in its upward movement, to come in contact with the arm i^9 and rock or oscillate the same upon its bolt. By means of this movement its cam-projection i^{11} is caused to come in contact with the cam-projection i^5 of the arm i^1 and give the latter a partial revolution upon its axle-pin. By this movement the pawl i^8 is caused to engage with the ratchet-teeth of the disk and give it a partial revolution. The arm

i^1 , being held at an angle, is returned to its normal position by the action of gravitation, when the arm i^9 is permitted to return by the backward movement of the arm i^{13} upon the bar h^5 . From this it will be understood that the ink-disk receives a partial revolution at each oscillation of the ink-frame.

V. *The ink-distributor under the bed and the mechanism for giving the same a double movement.*—J, Fig. 2, represents a rod or shaft extending across the machine, which is supported by the side plates, as shown.

j represents the ink-distributor consisting of a curved plate having arms which are loosely secured upon the shaft J by sleeves or other proper means in such manner as to permit the plate to oscillate upon the shaft and also to move in a lateral direction thereon.

j' , Figs. 9 and 10, represents a cam upon the main shaft, the groove of which is adapted to give a lever-pin resting therein a forward and backward movement, with an interval of rest after each change.

j'' represents a lever pivoted in any proper bearings upon one of the side plates, the pin of which rests in the groove of the cam, as shown.

j^3 represents a bent portion of the short arm of the lever, and j^4 a spring-bolt latch suitably held therein.

j^5 represents a slot cut in the edge of the distribution-plate, into which extends the upper end of the spring-bolt when the parts are in their normal position.

The operation of these parts is substantially as follows: The ink-rollers, in completing their downward movement, pass over the ink-distributor, the latter being held stationary during this movement by its contact with the bolt j^4 . The ink-rollers, in starting to return, lift the distributor by the friction of contact, and consequently move with the same without revolution for a short distance. By means of this action the rollers are caused to begin their revolution in return at a different point relatively to the type than that at which they stopped, and hence a new roller-surface is presented to the type in the return movement. The distributor also, in addition to the vibratory movement given to it by the rollers, receives a lateral movement upon the shaft at regular intervals for the purpose of presenting a fresh surface to the rollers at each downward movement of the same. This lateral movement is caused by the action of the cam and the intermediate lever mechanism described, the cam being turned to move the distributor first in one direction and then in the other before the passage of the rollers over it. By depressing the bolt the distributor may be swung backward out of the way when it is desired to dispense with the use of the same, it being held in this rearward position by contact with the bolt when the same is returned to its normal position.

Some of the advantages of the foregoing construction are as follows: By means of the construction and arrangement of the crank-shaft and connecting-rod the platen is given an oscillating movement with an interval of rest, by means of which ample time is afforded for feeding the sheet. By means of the mechanism for regulating the impression a perfect adjustment of the platen may be readily and quickly made. By means of the mechanism for throwing off the impression the operation may be instantly performed, whenever desired. By means of this construction, also, the platen is supported by perfectly solid bearings having no appreciable wear. By means of the lower ink-distributor a more thorough distribution is obtained and a more even application of the ink to the form. By means of the mechanism for holding the inking-rollers an easy movement and nearly-uniform tension are obtained.

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

1. In combination with the platen, the main shaft, and the crank, a connecting-rod with intermediate connecting devices, substantially as described, for uniting the connecting-rod to the platen, substantially as described, the pivot of the upper end of the connecting-rod being during a portion of its movement nearly coin-

cident with the center of the main shaft, substantially as and for the purpose set forth.

2. In combination with the bar g^{12} and the blocks g^9 for adjusting the same, the movable bar g^{14} , as set forth. 35

3. In combination with the base plate and face-plate of the platen, the ledges g^6 g^7 , wedge-blocks g^9 , springs g^{11} , and bars g^{12} g^{14} .

4. In combination with the hook-rods h^{10} and the springs h^{13} , the hollow studs h^8 , having slots for guiding the rods, as described. 40

5. In combination with the hook-rod having the springs h^{12} , the bar h^{11} , and spring h^{15} , as described. 45

6. In combination with the rod J, the ink-distributor j , adapted to swing upon the pivotal rod J, as described, and the inking-rollers, the combination being such that the former receives a vibration by the upward movement of the latter, as described. 50

7. In combination with a pivoted ink-distributor located below the bed, mechanism, substantially as described, for giving it a lateral vibration, and inking-rollers, substantially as described, for giving a swinging movement. 55

This specification signed and witnessed this 28th day of February, 1880.

WILLIAM H. GOLDING.

Witnesses:

GEO. C. STEARNS, Jr.,

WARREN B. GALUCIA.