

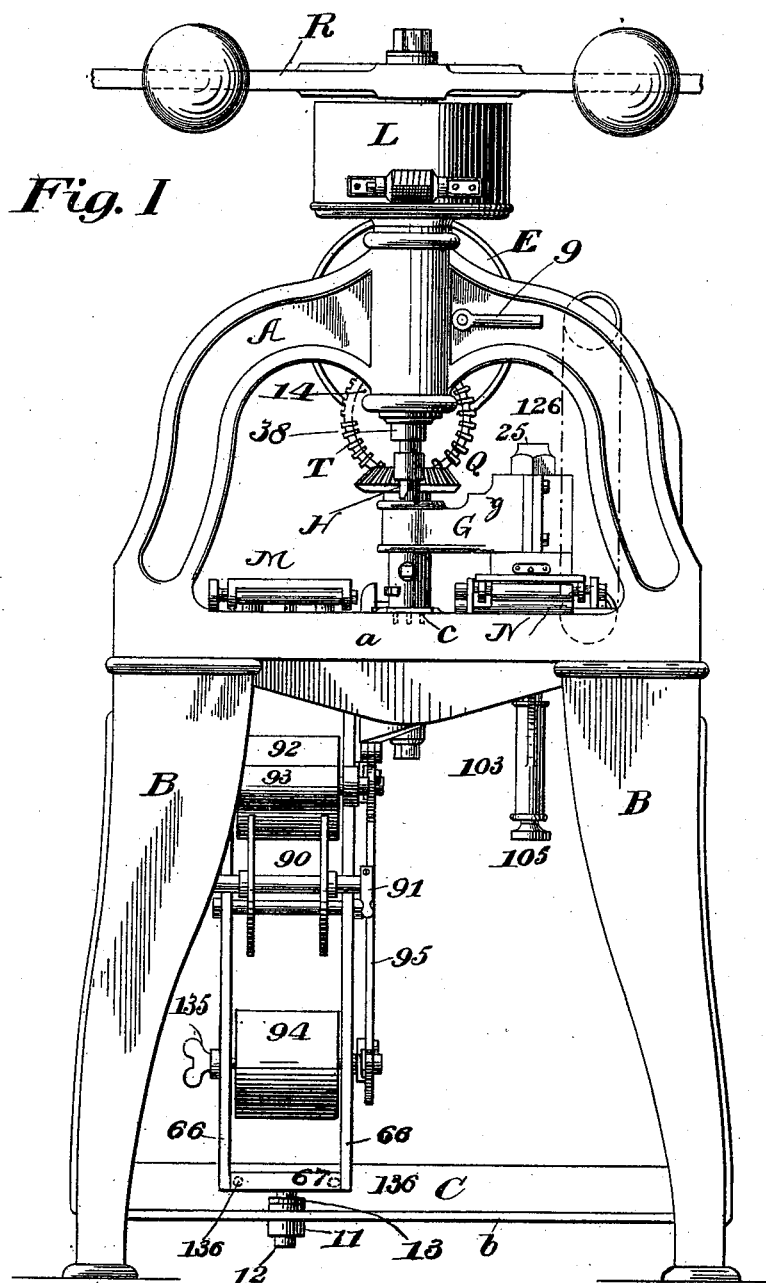
(No Model.)

8 Sheets—Sheet 1.

J. Y. JOHNSTON & B. F. BERGH.
EMBOSSED PRINTING PRESS.

No. 523,914.

Patented July 31, 1894.



WITNESSES:

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Jas. F. Mullaly

INVENTORS

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(No Model.)

8 Sheets—Sheet 2.

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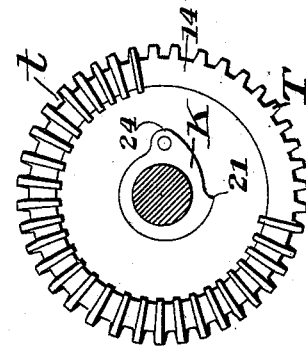


Fig. X

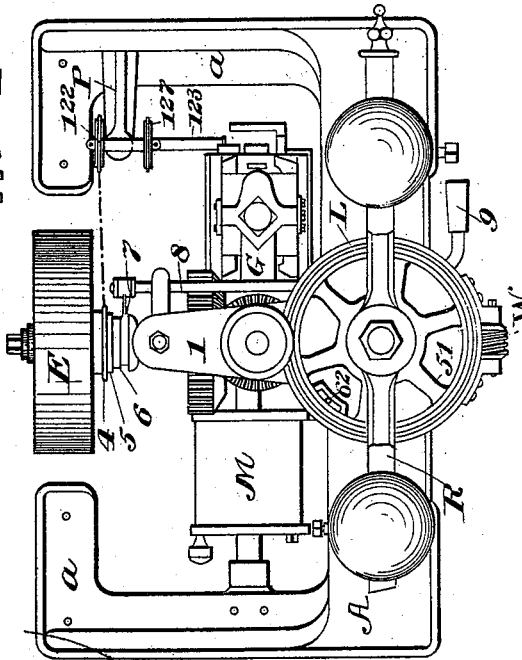


Fig. III

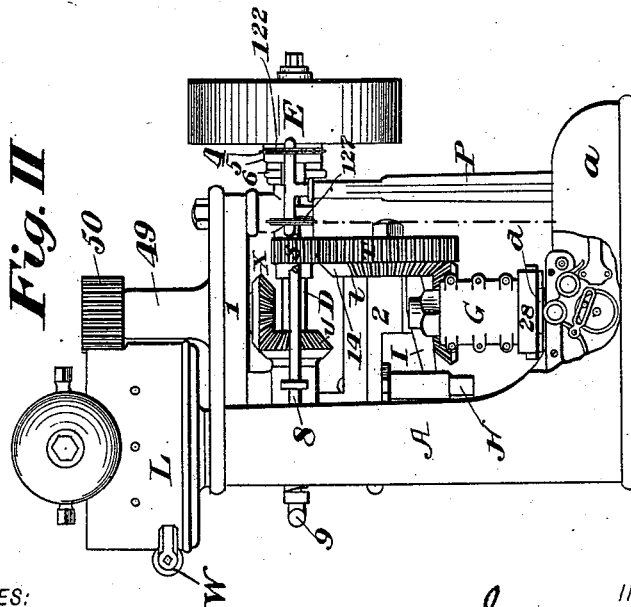


Fig. II

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8 Sheets—Sheet 3.

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Fig. IV

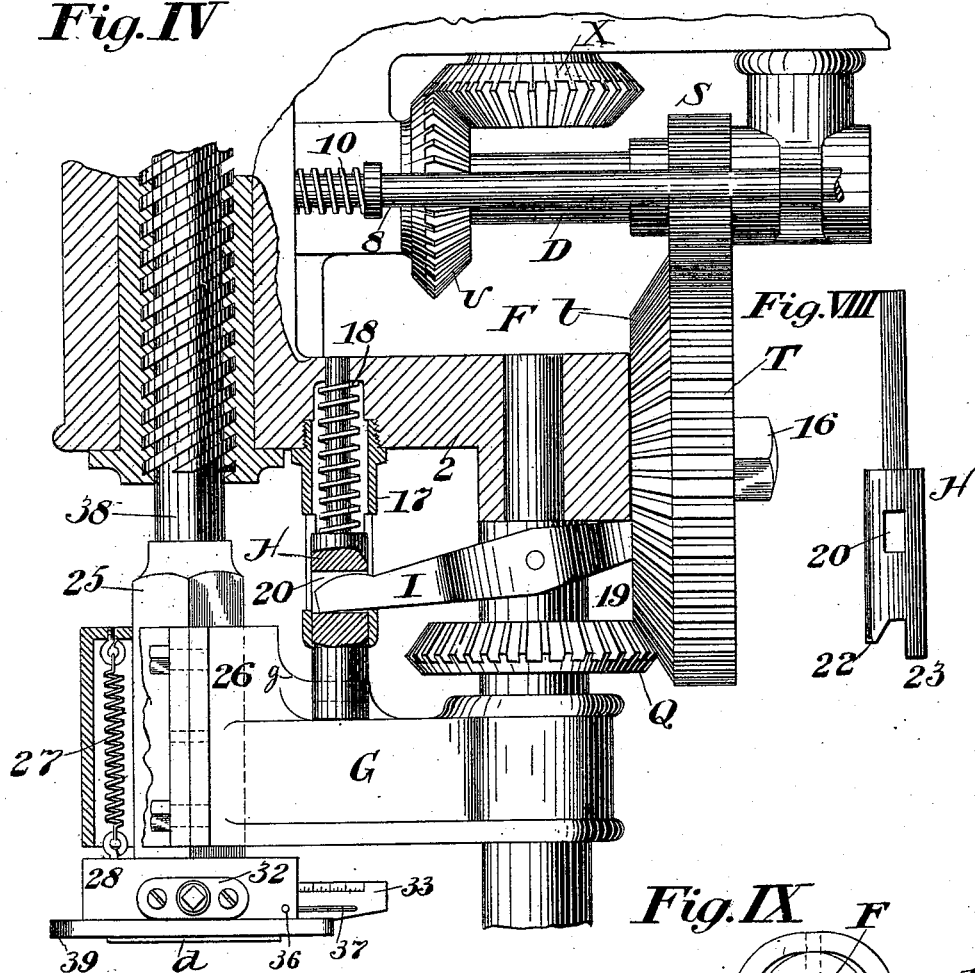
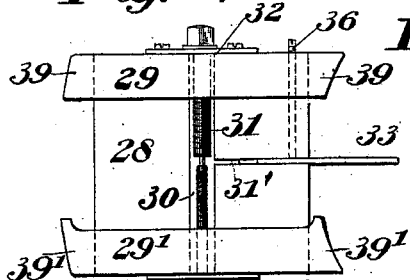


Fig. V



WITNESSES: 32'

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Fig. VI

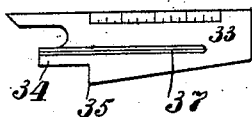


Fig. IX F

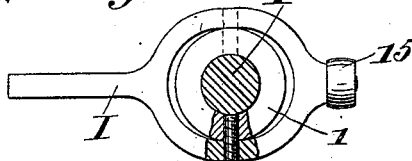
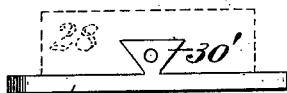


Fig. VII



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Fig. XI

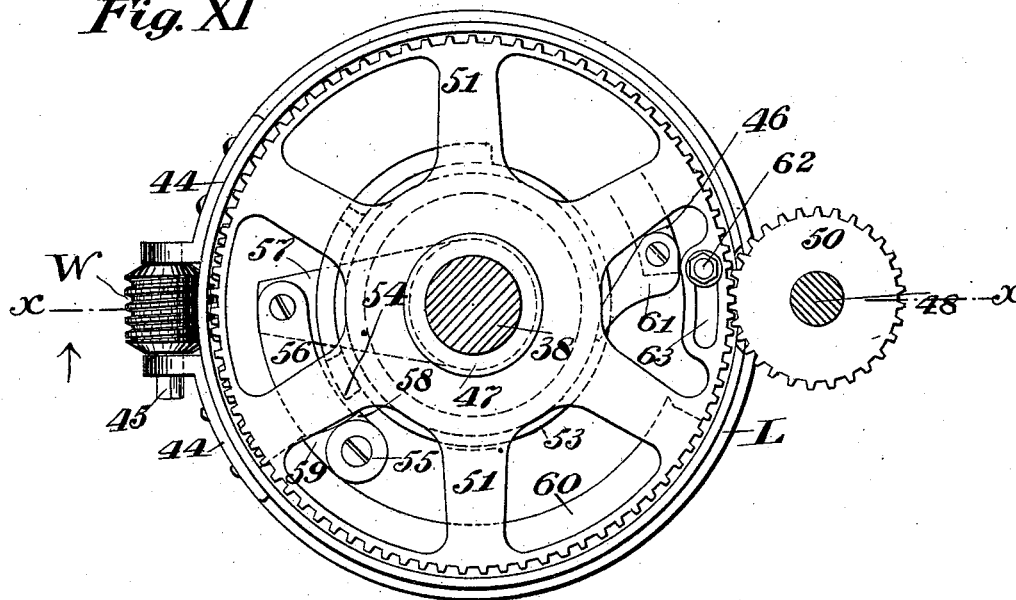
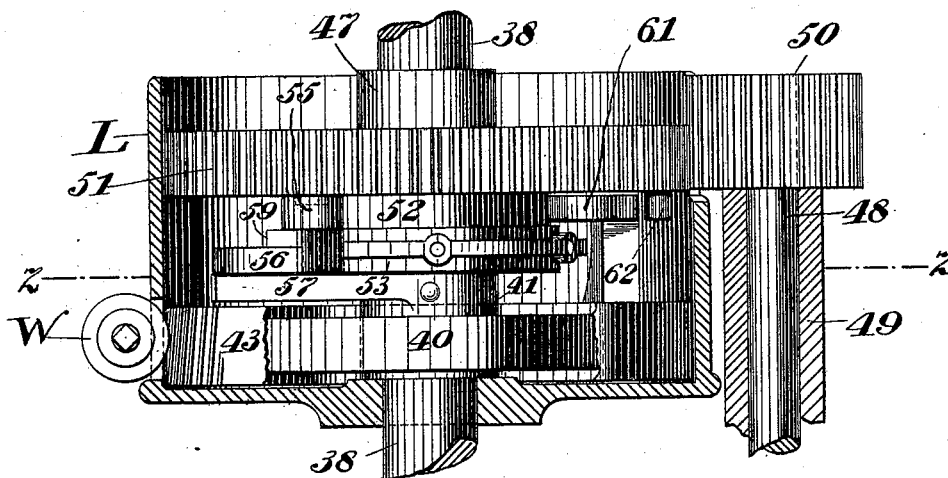


Fig. XII



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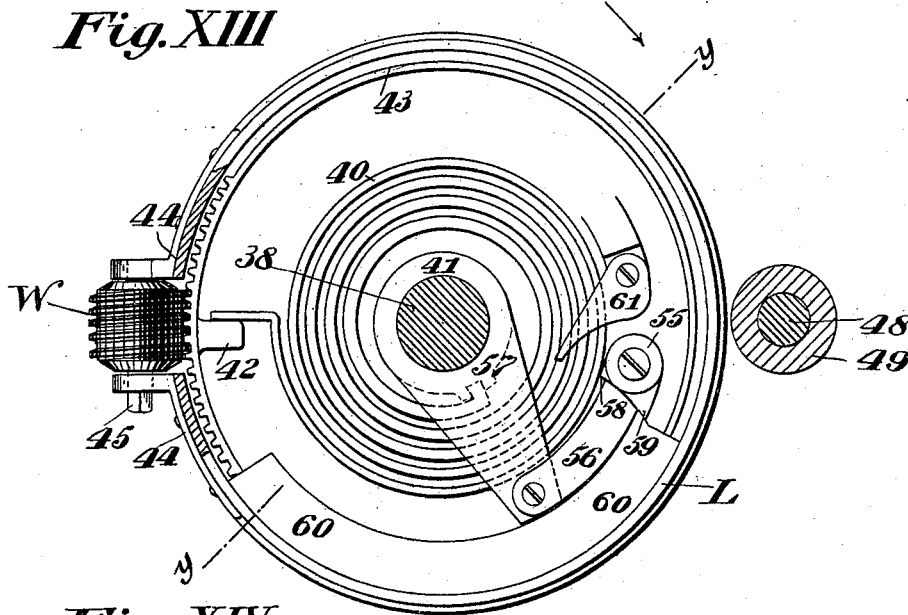
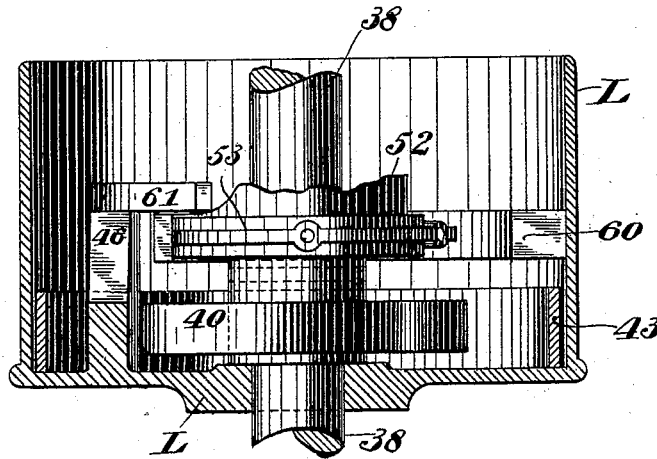


Fig. XIV



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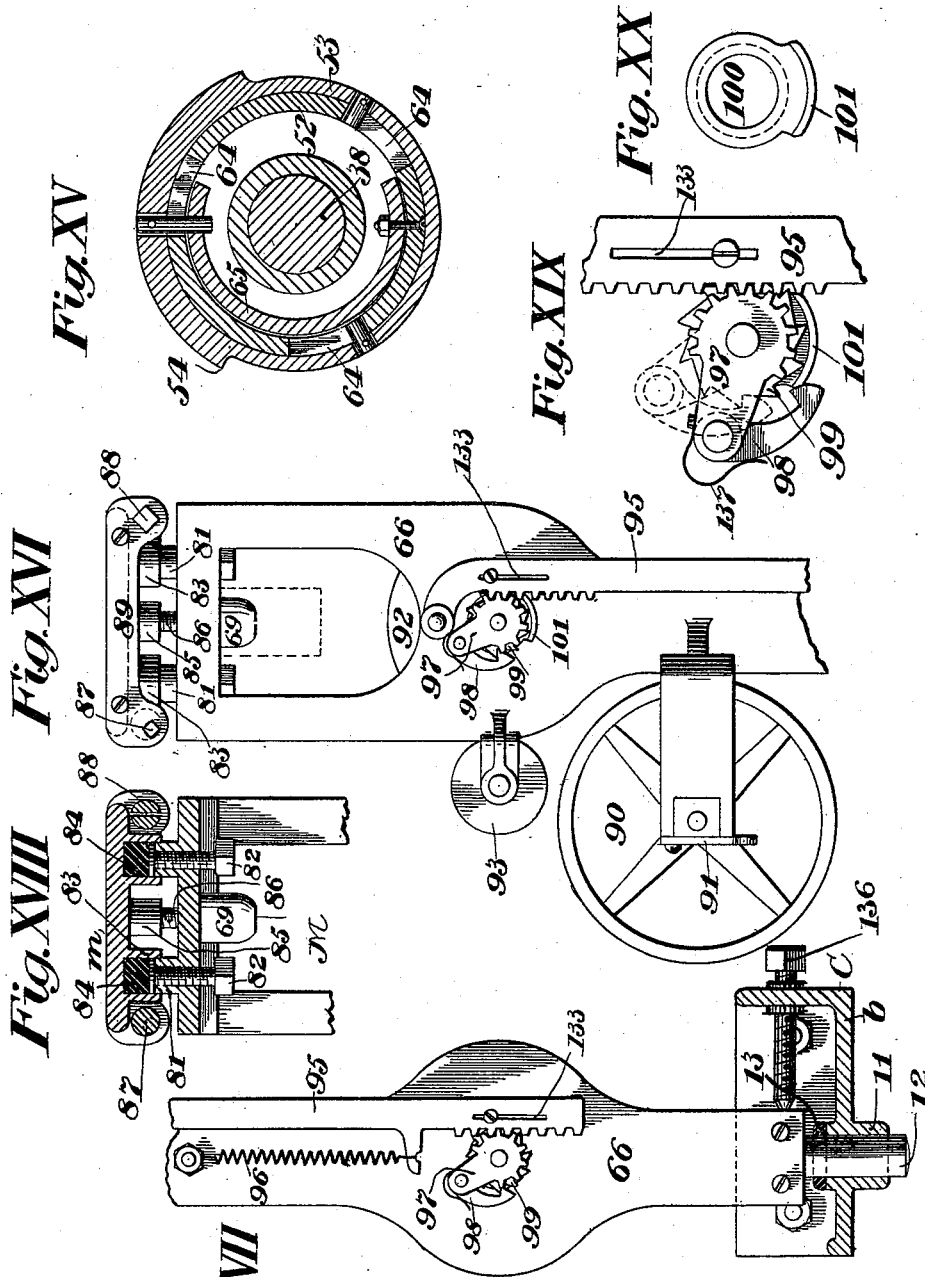
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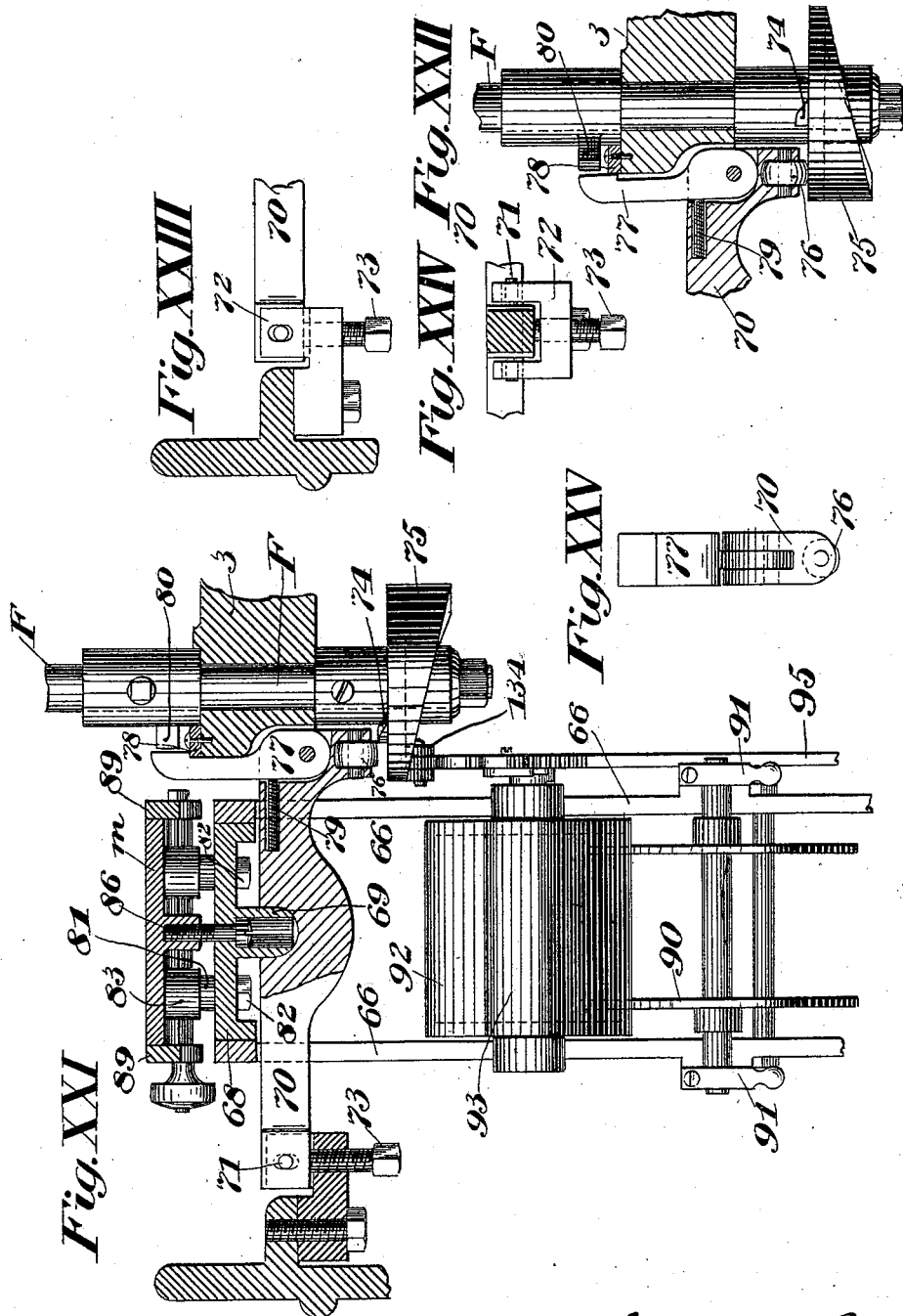
8 Sheets—Sheet 7.

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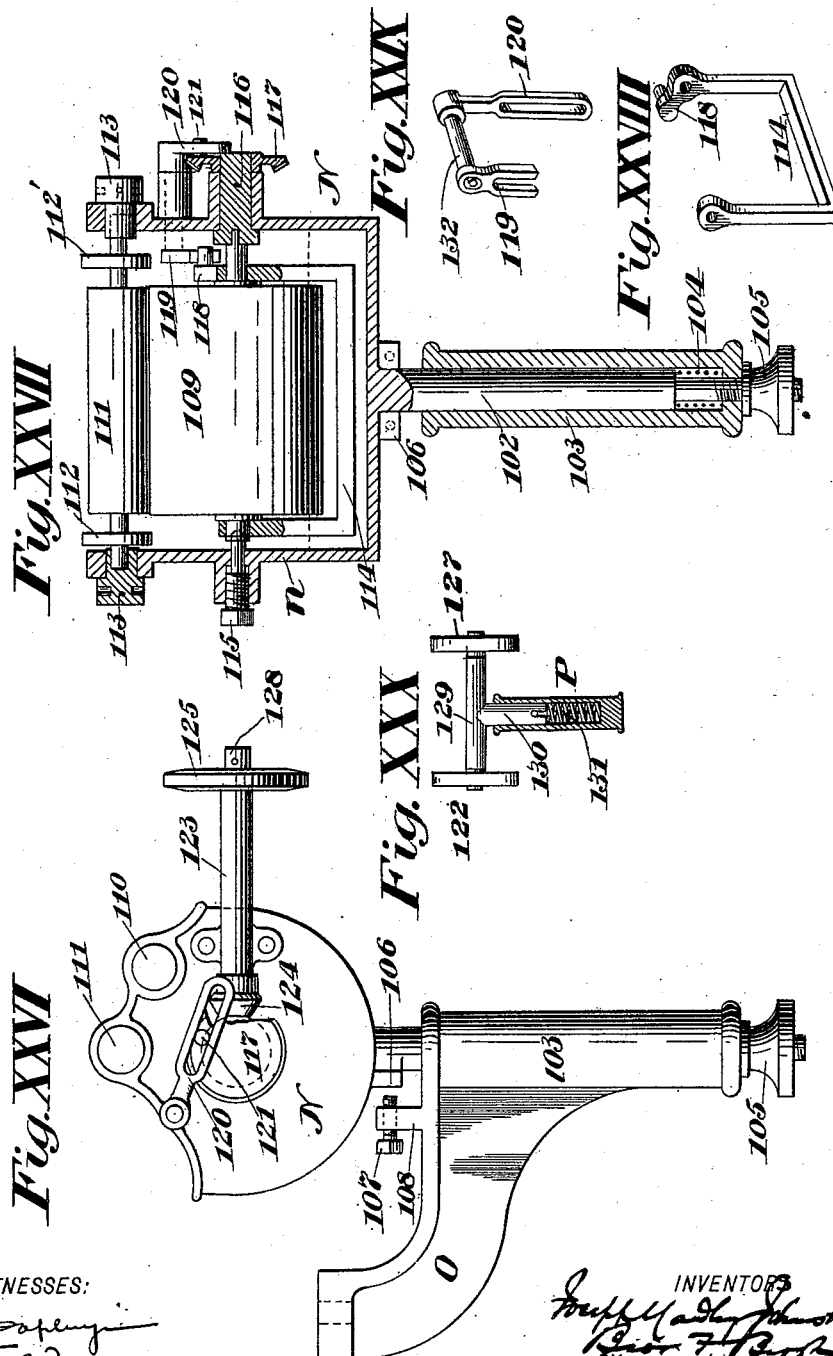
8 Sheets—Sheet 8.

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UNITED STATES PATENT OFFICE.

JOSEPH YARDLEY JOHNSTON AND BROR F. BERGH, OF NEW YORK, N. Y.;
SAID BERGH ASSIGNOR TO SAID JOHNSTON.

EMBOSSSED-PRINTING PRESS.

SPECIFICATION forming part of Letters Patent No. 523,914, dated July 31, 1894.

Application filed March 23, 1894. Serial No. 504,863. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH YARDLEY JOHNSTON and BROR F. BERGH, citizens of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Embossed-Printing Presses; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in presses for embossed printing, and more particularly to improvements in the press covered by Letters Patent of the United States, No. 504,680, issued the 5th day of September, 1893, to Joseph Yardley Johnston. The basic elements of the Johnston press—the spring-actuated screw plunger, the revolving die, and the spring-and-cam-actuated inker and wiper—are retained, and the present invention consists in novel and improved arrangements and constructions of these fundamental parts and of the mechanism operating them, as hereinafter fully described, with the result of increasing the speed of the press, diminishing the expense of operating it, and greatly augmenting the perfection of its work. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure I is a front elevation of an embossed printing press embodying our said improvements. Fig. II is a side elevation of the upper part of the press. Fig. III is a plan view of the upper part of the press. Fig. IV is a sectional side elevation, showing the operative connection of the principal parts. Fig. V is an under side view of the die block and holder. Fig. VI is a side elevation of a gage for longitudinally adjusting the die in the die holder. Fig. VII is a side elevation of one of the jaws holding the die. Fig. VIII is a side elevation of the locking pin, which arrests the die-carrying arm in its revolution. Fig. IX is the lever which in part operates the said locking pin. Fig. X is a front elevation of the cam which actuates the locking pin, showing its relation to the teeth of the

mutilated bevel gear which actuates the die-carrying arm. Fig. XI is a plan view of the mechanism operating the screw plunger, and of its surrounding casing. Fig. XII is a vertical sectional view on the line $x-x$ of Fig. XI. Fig. XIII is a plan view on the line $z-z$ of Fig. XII. Fig. XIV is a vertical section on the line $y-y$ of Fig. XIII. Fig. XV is a horizontal section through the sleeve depending from the cog-wheel which actuates the screw plunger, showing the method of imparting elasticity to its surrounding shoe. Figs. XVI and XVII are side elevations of the upper and lower parts of the combined wiping and paper-feeding device. Fig. XVIII is a vertical section through the middle of the top plate of the wiper. Figs. XIX and XX show details of the paper-feeding rack bar, ratchet wheel, and regulating hood. Fig. XXI is a sectional elevation of the wiper, as it appears while the die is passing over it, showing the mechanism for raising, locking, and lowering it. Fig. XXII is a sectional elevation of the same mechanism, showing its position after the die has passed over the wiper. Figs. XXIII, XXIV, and XXV show details of the lever supporting the combined wiping and paper-feeding device. Fig. XXVI is an end elevation of the inking device, showing its supporting bracket. Fig. XXVII is a vertical section through the inking device and its supporting bracket. Fig. XXVIII is a perspective view of the ink agitator. Fig. XXIX is a perspective view of the forked lever which actuates the ink agitator. Fig. XXX is a vertical section through the standard, T-shaped supporting sleeve, and sprocket wheels which transfer motion to the inking device.

Similar letters and numerals designate the corresponding parts in all the figures.

A is the frame of the press, having the base a , and being provided with the arms 1, 2, and 3, supporting the driving mechanism. The press frame is mounted upon a suitable stand B, having the cross-tie C, provided with the flange b , which supports the paper-feeding and wiping device as hereinafter explained.

D is the main shaft, located centrally near the top of the press, and carrying the driving pulley E, loosely mounted thereon, but with-

out lateral play. The movement of the main shaft is controlled by handle 9, in connection with an incline not shown, spring 10, and rod 8, having the forked arm 7, whereby the sliding clutch 6 is moved backward and forward into and out of engagement with the fixed clutch 5, attached to the driving pulley.

G is the revolving die-carrying arm, firmly attached at one end to vertical shaft F, and having at the other end die box 26, in which moves up and down die plunger 25, carrying at its lower end die block 28, which is supported by spring 27. Motion is transferred from shaft D to shaft F by pinion S, cog-wheel T, supported by stud 16 and carrying mutilated bevel gear *t*, and bevel pinion Q. The teeth of mutilated bevel gear *t* cause one complete revolution of pinion Q, and by consequence of revolving arm G, at each revolution of cog-wheel T, and are so disposed that the blank portion 14 of the gear is presented to pinion Q while the operations of locking and unlocking the revolving arm and striking the impression blow are being performed.

Revolving arm G is locked and unlocked by locking-pin H, which moves vertically in sleeve 17, attached to arm 2, being pressed downward by spring 18 and elevated by lever I. Lever I is pivotally attached to bush 19, its forward end resting in slot 20 of the locking-pin, and its rear end, carrying roller 15, resting against cam K, attached to the front face of cog-wheel T. Fig. X shows the relation of blank space 14 to cam K, and the projections 21 and 24 of cam K, by which respectively the locking pin is raised just before the revolving arm brings the die plunger under the screw plunger, and just after the impression blow has been struck. The lower end of the locking-pin is furnished with fingers 22 and 23, the former impinging upon rib *g* suitably located on the top of the revolving arm and by friction checking it, and the latter finally locking it without jar as the spring forces the pin down over rib *g*, which is adapted to fit snugly in the space between the two fingers.

Die block 28 has on its under side a transverse dove-tailed groove 30, and sliding in it the correspondingly dove-tailed tenons 30' of the two jaws 29 and 29'. These tenons form suitably threaded nuts for the right-and-left-hand screw 31, supported by plates 32 and 32', and serving to move the jaws (which hold die *d*) conjointly in and out from a common center. For centering the die longitudinally is provided the gage 33, having the channel 37 to receive the point of set-screw 36, and which slides in a suitable groove 31', located centrally in the bottom of the die block, on one side of and at right angles to groove 30. The bottom 34 of the gage is flush with the bottom of the die block, but the projecting shoulder 35 catches the die and thus accurately centers it longitudinally. On base plate *a* of the press, and directly beneath screw plunger 38, rests the movable counter plate *c*, held in

place by dowels or otherwise, upon which the counter or counter die is built up. This movable counter plate, in conjunction with the sliding jaws and gage, admits of the removal of the counter and die and their accurate replacement at any time.

Screw plunger 38 moves up and down for about one-third of a revolution, in a suitable nut located centrally in the front part of the press frame, its upper end passing through the casing L, and carrying weighted cross bar R. In the bottom of the casing lies coil spring 40, its inner end being secured to sleeve 41, which is keyed to the plunger, and its outer end resting loosely against lug 42 of ring 43, lying movably in the bottom of the casing. The exterior face of ring 43 at the front of the press is provided with teeth, into which fits, through an opening in the casing, the thread of worm W, moving in bearings 44 and operated by the square head 45. At the upper part of sleeve 41, and carried by it, is arm 57; and pivotally attached to the outer end of arm 57 is link 56, having (at its head) shoulders 58 and 59 and roller 55.

Superimposed on sleeve 41, and surrounding screw plunger 38, is hub 47 of cog-wheel 51, located in the upper part of the casing, and revolved by pinion 50, carried at the top of shaft 48, which is supported in bush 49, and driven by bevel wheel X on its lower end and bevel wheel V on main shaft D. Cog-wheel 51 carries a tripping bolt 62, adjustably located in slot 63, and the depending sleeve 52. Surrounding sleeve 52, and at the same height above the bottom of the casing as link 56, is ring 53, held in place by three pins passing through slots 64 in the sleeve, the third pin being rigidly attached to one end of spring 65, within the sleeve, the other end of spring 65 being rigidly attached to the sleeve. On the exterior surface of ring 53 is the rib or shoe 54, and on the interior surface of the casing, at about the same height from the bottom, is the fixed shoe 60. Directly in front of pinion 50, and in the track of link 56, is the finger or cam 61, supported by standard 46, rising from the floor of the casing.

In operation, the forward end of elastic shoe 54, carried by sleeve 52 of revolving cog-wheel 51, catches shoulder 58 of link 56 and thereby carries the link with it, thus turning screw plunger 38 and winding up coil spring 40, until in its progress link 56 is thrown off shoe 54 by finger 61, when its shoulder 59 catches upon the forward end of shoe 60, and is there held until tripping bolt 62 comes along and disengages it; and then coil-spring 40 retracts the screw plunger, and the impression blow is struck. At the instant of the plunger's rebound, the forward end of shoe 54 again catches shoulder 58, its elasticity preventing jar, and the operation as just described is repeated. The tension of the coil-spring, and by consequence the force of the impression blow, are regulated by worm W and toothed ring 43.

N is the die inker, located in the path of the revolving die, its reservoir or casing *n* being supported by shank 102, resting on coil-spring 104, whose height is adjusted by thumb-nut 105, in sleeve 103, sustained by bracket O, suitably attached to the base of the press; whereby the inker is provided with a swivel motion, which adapts it to any size of die that may be used, and which is regulated by set-screws 107, passing through lug 108, and pressing against bar 106, attached to shank 102. Collecting roller 109 is carried on a short shaft, which also carries ink agitator 114, one end of the shaft being supported by pointed screw 115, and the other end fitting into a slot in rotating plug 116; whereby the removal and replacement of the roller are facilitated. The journals of the shafts of the evener 110 and the inking roller 111 rest in holes located eccentrically in stationary plugs 113; whereby their pressure on the collecting roller is regulated and their removal and replacement are facilitated. The agitator and rollers are kept in continuous motion in the following manner: Sprocket wheel 4 is secured to driving pulley E, and conveys motion to sprocket wheel 122 on one end of a shaft carried by sleeve 129, which is supported at its center by shank 130, resting on coil spring 131, in standard P, attached to the base of the press frame; at the other end of the shaft turning in sleeve 129 is sprocket wheel 127, which transfers the motion by chain 126 to sprocket wheel 125, fastened to one end of shaft 128, turning in sleeve 123, attached to the casing of the inker; at the other end of shaft 128 is bevel pinion 124, which gears with bevel pinion 117, attached to the outer end of rotating plug 116, with the inner end of which the shaft carrying the collecting roller is connected, as above stated; bevel pinion 117 carries a pin 121, working in slotted lever 120, which is connected by shaft 132 with forked lever 119, between whose prongs works the pin of crank arm 118, attached to the ink agitator. Near each end of the shaft of the inking roller are the disks 112 and 112', upon which the outer ends or cams 39 and 39' of jaws 29 and 29' impinge, as the die carrying arm revolves, depressing the inker just before the inking roller touches and leaves the die, whereby the edges of the die are kept clean, and the inking roller is forcibly thrown against the face of the die by coil-spring 104.

M is the combined wiper and paper-feeding device, located in the path of the revolving die, *m* being the top plate or wiping surface attached by screw-bolt 86 to plate 68, which is also the top cross-piece and 67 the bottom cross-piece of the frame 66, which carries the paper-feeding apparatus and wiper, and 70 being the lever which supports it all by means of the ball-shaped pivot 69, downwardly projecting from the center of cross-piece 68 into a suitable socket in the lever. The outer end of lever 70 lies between and is attached by pivot 71 to the forked ends 72 of

an arm projecting from the base of the press, and rests upon set-screw 73 as a fulcrum, by which set-screw also the height of the lever, and by consequence of the wiper plate, is adjusted. Tappet-cam 74, on the upper face of beveled cam 75, which is carried by vertical shaft F, acting on roller 76, at the inner end of lever 70, throws the wiping surface against the die. Simultaneously hook 77, which is pivotally attached to the inner end of lever 70, actuated by spring 79, catches upon plate 78, attached to arm 3, and firmly holds the wiper while the die is passing over it. The length of the wipe is regulated by tappet 80, adjustably attached to shaft F, which disengages hook 77 from plate 78; whereupon the entire frame drops by gravity, its lower end being guided by pivot 12, depending from cross-piece 67, and passing through eye 11 in flange *b* of cross-tie C, and being received on rubber spring 13. The wiper and paper-feeder being thus combined, and thus elevated and pressed together, the wiping paper is kept under a uniform tension, and its effectiveness thereby greatly increased. And the supporting and guiding pivots 69 and 12 allow a swivel motion to the frame, which may be regulated by set-screws 136 passing through cross-tie C, and thus provide a delicate adjustment of the wiping surface to the varying sizes of the dies in use.

Wiping plate *m* is secured at its center to cross-piece 68 by screw-bolt 86, passing up through ball-pivot 69, which is hollow, into the projection 85. It is adjustable at four points, and its pressure on the die is regulated, by bolts 82, passing up through cross-piece 68 and its projecting eyes 81, and pressing against rubber springs 84, resting in cups 83, depending from the under side of the plate. Passing through side bars 89 at either end of the wiping plate *m* are eccentrically journaled roller 87, its eccentric side when turned touching the under surface of the wiping plate, and roller 88, slotted along its entire length between the side bars, by which rollers is attached and firmly secured the felt or other material customarily covering the wiping plate in the following manner: Roller 87 being sufficiently turned inwardly, the end of the felt is passed between it and the upper plate, and the roller is then turned back, catching the felt as in a vise; the other end of the felt is carried over plate *m* and passed through the slot in roller 88, which is then turned until the end of the felt is caught under and secured by the surrounding fabric, and the whole sufficiently stretched, when roller 88 is fastened by a jam nut. Over the wiping surface thus prepared passes the wiping paper from supply roller 90, (removable by merely turning latches 91,) through feeding rollers 92 and 93, to the take-up roller 94.

The paper-feeding operation is thus performed: Attached to the inner side of the frame 66 by studs, which pass through slots 133, is rack-bar 95, having teeth opposite the

journals of rollers 94 and 92, which engage with the teeth of sectors 97, turning loosely on said journals, and carrying pawls 98, which (by aid of springs 137) engage with ratchet wheels 99, keyed to the roller shafts. When the die has been wiped and hook 77 thrown off, bevel cam 75, pressing upon roller 134, pushes down rack bar 95, which simultaneously turns the feeding and take-up rollers. To regulate the quantity of paper fed, ring 100, carrying flange or hood 101, is adjustably secured to the eye forming the bearing of the feed roller journal, and the location of the hood in respect of the ratchet wheel determines which tooth of said ratchet wheel the pawl shall engage with, and by consequence the extent to which the feed roller, firmly keyed to its shaft, shall turn. The take-up roller runs loosely on its shaft, being carried along by friction, regulated by thumb nut 135 to the strength of the paper; and while its shaft turns a uniform distance at each downward movement of the rack bar, the roller itself turns only enough to take up the waste paper fed to it. When the pressure of cam 75 is removed, rack bar 95 is retracted by spring 96, until it is in position for another feed movement.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination of a revolving die-carrier provided with rib *g* with a cam-and-spring-actuated locking pin provided with fingers 22 and 23, substantially as described.

2. The combination of die plunger 25, die block 28, movable jaws 29 and 29', right-and-left-hand screw 31, grooves 31' and 30, and gage 33, with die *d*, substantially as and for the purpose described.

3. Screw plunger 38, casing L, worm W, ring 43, lug 42, coil-spring 40, sleeve 41, arm 57, link 56 having shoulders 58 and 59, shoes 54 and 60, finger 61, wheel 51, and tripping bolt 62, in combination with mechanism for revolving wheel 51, substantially as and for the purpose described.

4. Screw plunger 38, casing L, ring 43, lug 42, coil-spring 40, sleeve 41, arm 57, link 56 having shoulders 58 and 59, shoes 54 and 60, finger 61, wheel 51, and tripping bolt 62, in combination with mechanism for revolving wheel 51, substantially as and for the purpose described.

5. Screw plunger 38, coil-spring 40, and lug 42, in combination with cog-wheel 51 and intermediate mechanism for turning the screw plunger against the coil-spring and suddenly releasing it, substantially as and for the purpose described.

6. The combination of screw plunger 38, coil spring 40, one end thereof connected with screw plunger 38 and the other end resting against lug 42, and lug 42, with means for adjustably moving lug 42, substantially as and for the purpose described.

7. Screw plunger 38, connected with coil-spring 40 and carrying cross bar R, cog-wheel 51, and pinion 50, in combination with mechanism for turning plunger 38 against the coil-spring and suddenly releasing it, substantially as and for the purpose described.

8. Main shaft D, bevel pinions V and X, vertical shaft 48, pinion 50, and cog-wheel 51, in combination with a spring-actuated screw plunger and intermediate mechanism for operating the screw plunger, substantially as described.

9. Die block 28, carrying die *d* and the combined die clamping jaws and cams 29 and 29', in combination with a die inking device, carrying disks 112 and 112' and resting on spring 104, substantially as and for the purpose described.

10. Die *d*, combined die-clamping jaws and cams 29 and 29', right and left hand screw 31, die block 28, and die plunger 25, in combination with die inker N resting on spring 104 and carrying disks 112 and 112', substantially as described.

11. Die inker N, resting on spring 104 and carrying sprocket wheel 125, in combination with sprocket wheels 122 and 127 resting on spring 131, and sprocket wheel 4 attached to the driving pulley, substantially as and for the purpose described.

12. Sprocket wheel 4, sprocket wheels 127 and 122 supported by shank 130 and standard P, in combination with sprocket wheel 125, shaft 128, bevel pinion 104, bevel wheel 117 keyed to the shaft of the evening roller, pin 121, shaft 132 carrying slotted lever 120 and forked lever 119, ink agitator 114, and ink reservoir *n* supported by shank 102 and standard O, substantially as and for the purpose described.

13. A die inker, consisting of ink reservoir *n* through which pass screw 115 and rotating plug 116 carrying the shaft of the collecting roller, and movable plugs 113 carrying in eccentrically located holes the shafts of the evener and inking roller, substantially as and for the purpose described.

14. Main shaft D, pinion S, cog-wheel T, mutilated bevel wheel *t*, bevel gear Q, and vertical shaft F carrying cams 74 and 80, in combination with hook 77, and adjustable lever 70 carrying a combined wiping and paper-feeding device, substantially as described.

15. A combined wiping and paper-feeding device, carrying hook 77 and rack bar 95, in combination with arm 3, carrying plate 78, and shaft F, carrying cams 74, 75, and 80, substantially as and for the purpose described.

16. A die wiper, consisting of an upper plate secured at its center to a lower plate and elastically and adjustably supported at four surrounding points, and having a supporting pivot beneath the center of the lower plate, in combination with reciprocating mechanism and a revolving die substantially as and for the purpose described.

17. A traveling die in combination with a die wiping device having upper plate *m* elastically supported by lower plate 68, side bars 89 attached to plate *m*, and eccentrically-journaled roller 87 and slotted roller 88 carried by side bars 89 at either end thereof, substantially as and for the purposes described.

18. A combined die wiping and paper feeding device consisting of an upper wiping plate adjustably and elastically connected with a bottom plate which carries a frame supporting the paper-feeding rollers, in combination with mechanism for operating the same, substantially as described.

19. A combined wiping and paper-feeding device, consisting of a frame carrying the wiping plate and the supply, feeding, and take-up rollers, in combination with a die and mechanism for causing a reciprocating movement of the frame to and from the die and for operating the paper feeding device, substantially as and for the purpose described.

20. A paper-feeding device adapted to move in unison with a die wiping device in combination with the die wiping device and the die

and mechanism for operating the same, substantially as and for the purpose described.

21. A die and a die wiping device in combination with a supporting paper-feeding device consisting of a supply roller, a pair of feeding rollers, and a take-up roller, mounted in a frame carrying a rack-bar and with mechanism for operating the rack bar, and regulating the paper feed and take-up, substantially as described.

22. In a paper-feeding device, feed roller carrying ratchet wheel 99, pawl 98, and sector 97 with adjustable hood 101, supporting frame 66, take-up roller 90 adapted to turn on its shaft by friction and carrying ratchet wheel 99, pawl 98, and sector 97, in combination with rack bar 95 and mechanism for operating it, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH YARDLEY JOHNSTON.

BROR F. BERGH.

Witnesses:

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GEO. A. SHIPMAN.