

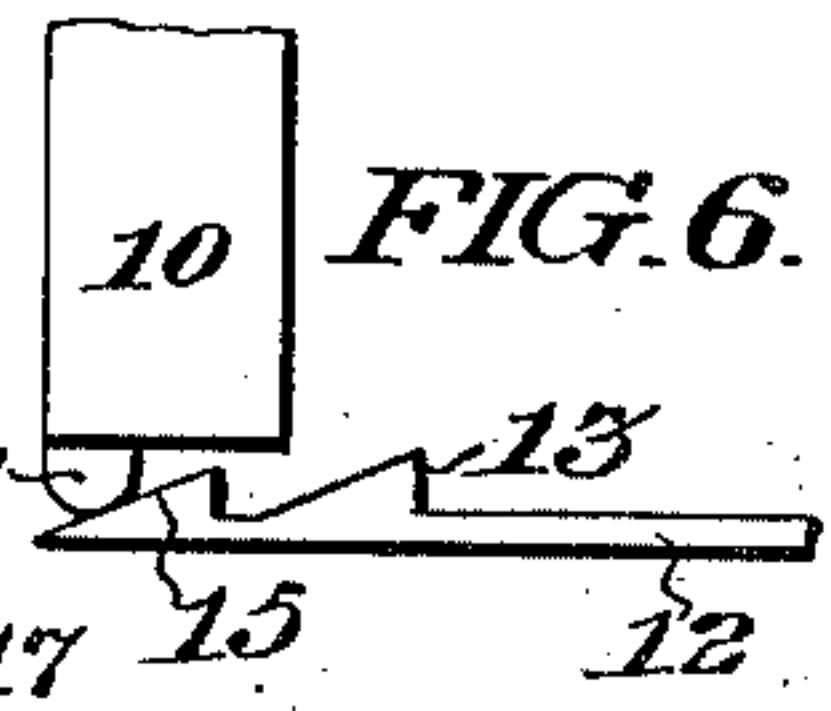
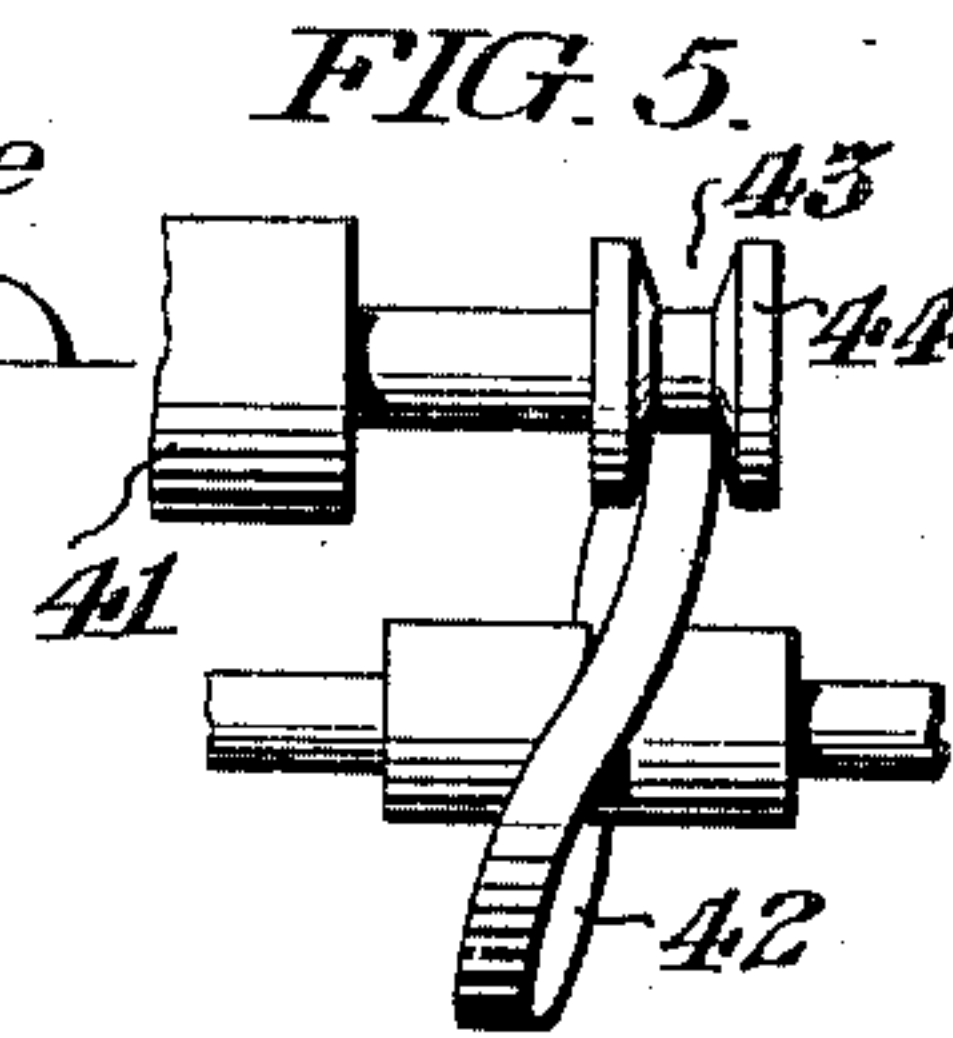
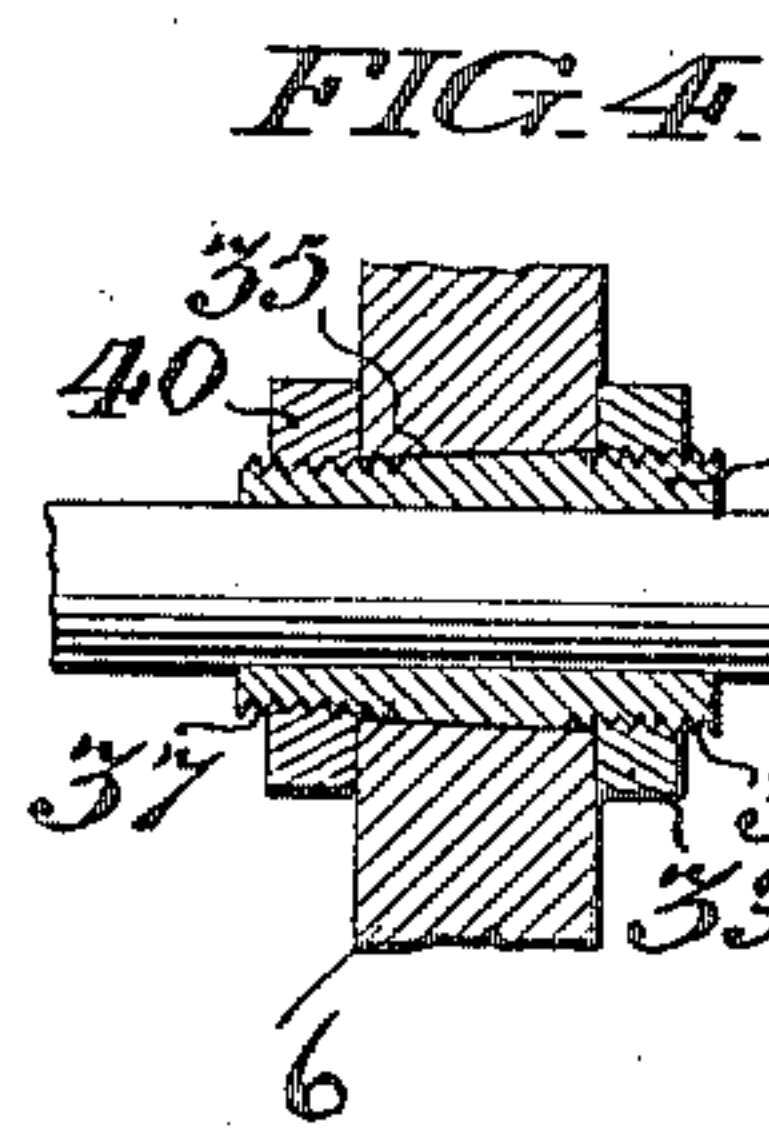
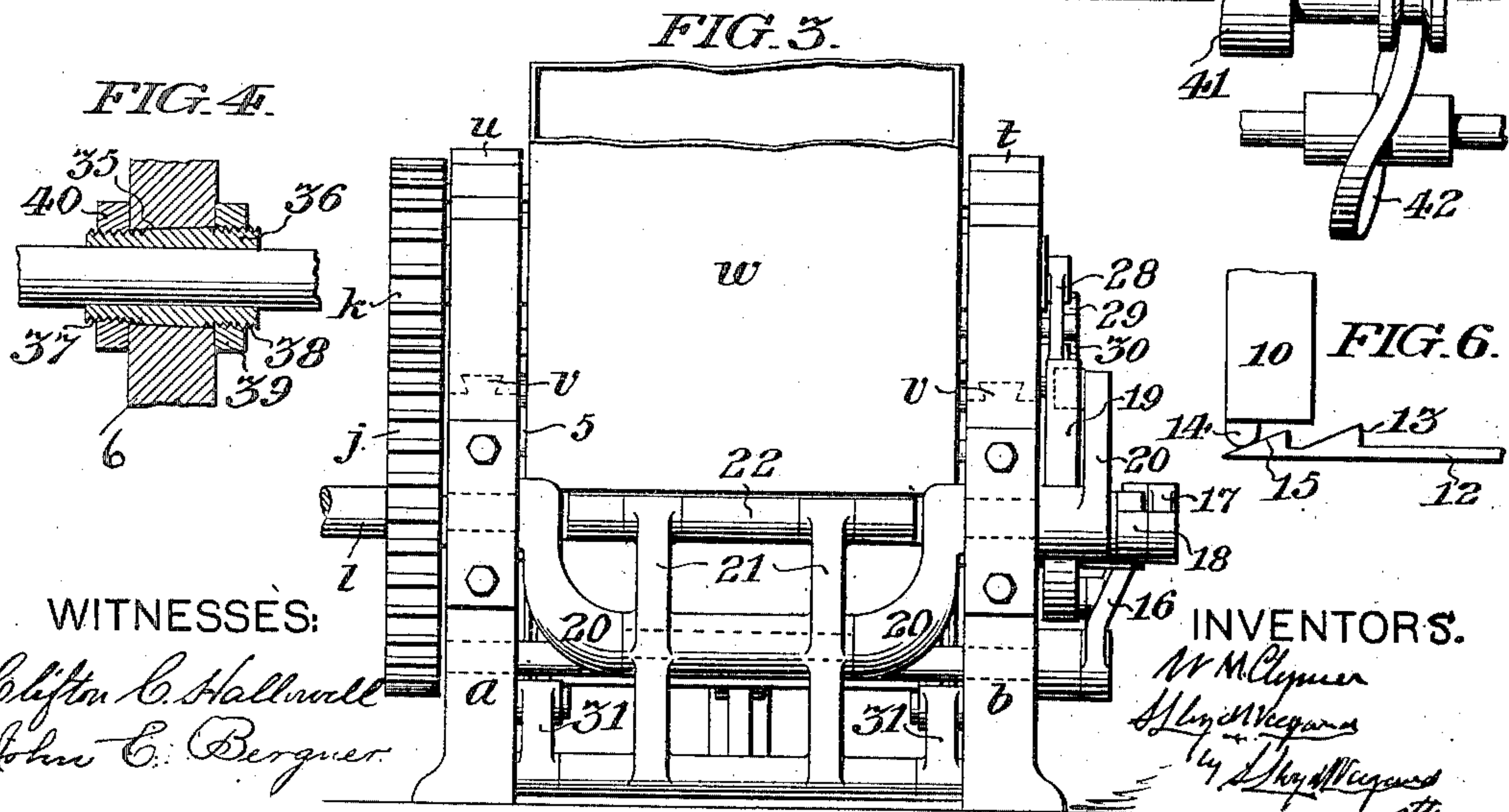
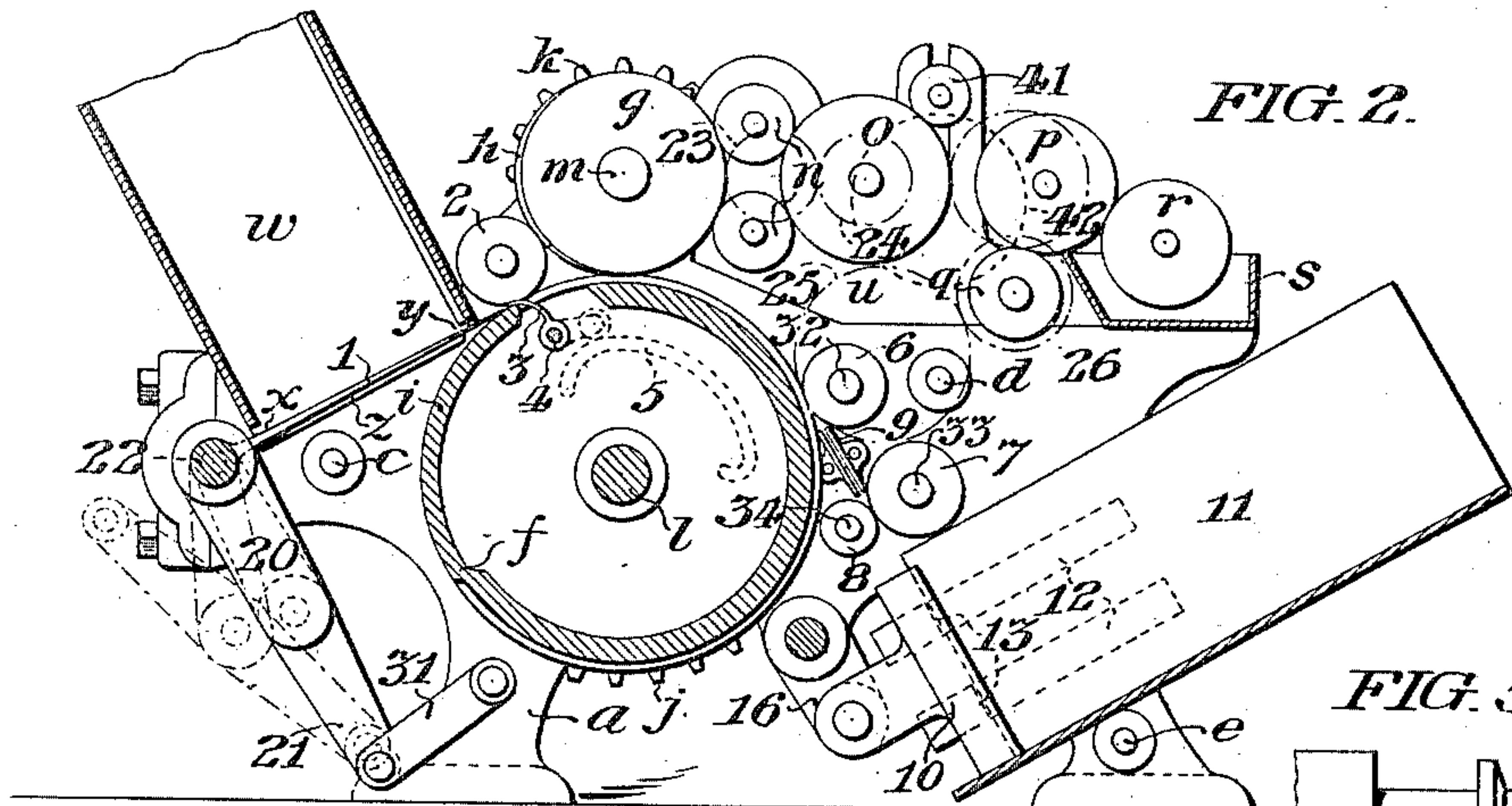
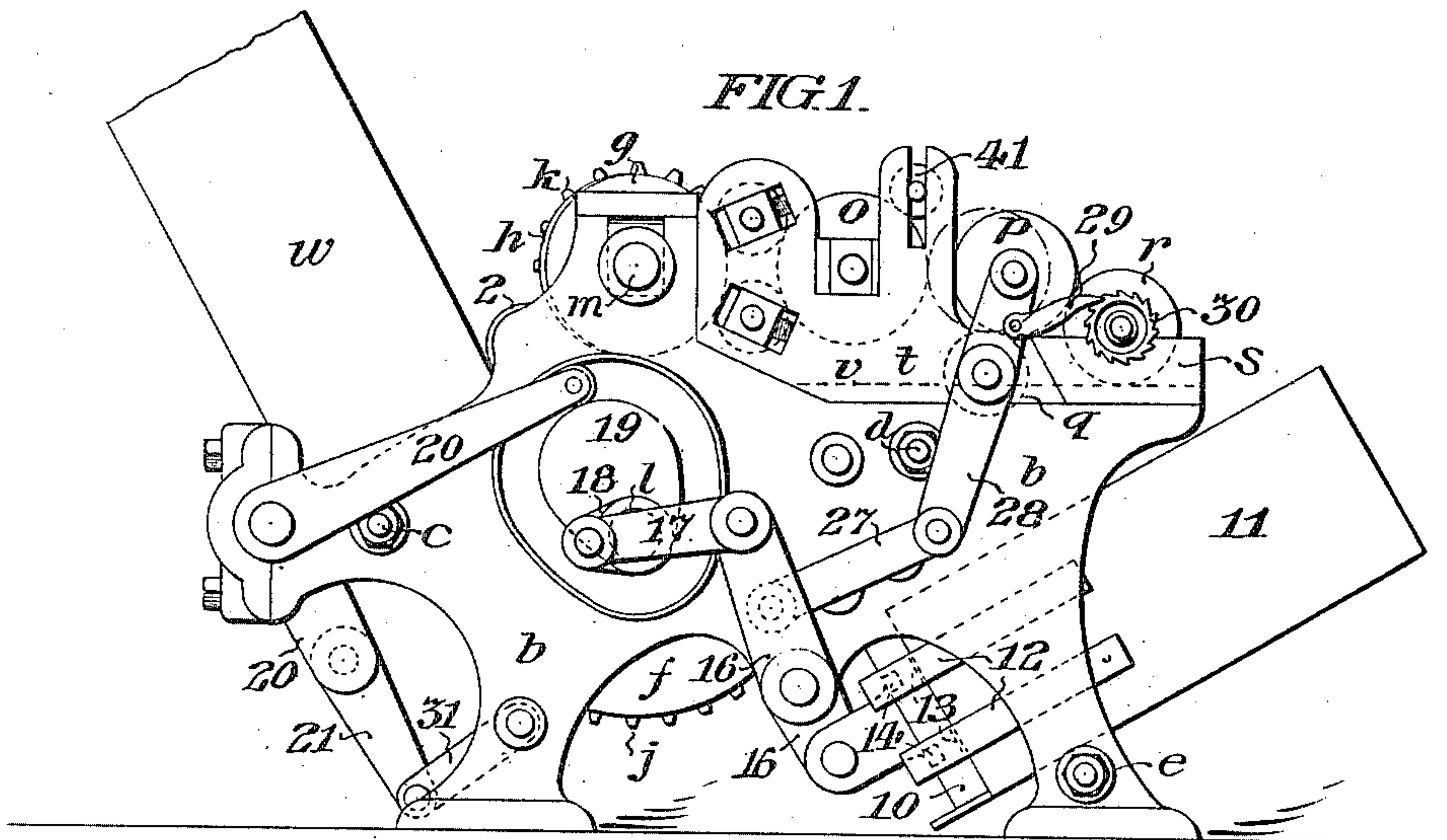
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Patented Feb. 12, 1901.

W. M. CLYMER & S. L. WIEGAND.
MACHINE FOR PRINTING ENVELOPS.

(Application filed July 18, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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MACHINE FOR PRINTING ENVELOPS.

SPECIFICATION forming part of Letters Patent No. 668,034, dated February 12, 1901.

Application filed July 18, 1900. Serial No. 24,023. (No model.)

To all whom it may concern:

Be it known that we, WELLWOOD M. CLYMER and S. LLOYD WIEGAND, citizens of the United States, and residents of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Machines for Printing Envelops, of which the following is a specification.

10 The object of this invention is to print envelopes rapidly with correct register; and to this end this invention consists in an improved arrangement for feeding and discharging the envelopes and an improved construction of inking and impressing apparatus, as hereinafter described, and shown in the accompanying drawings.

Referring to the drawings, Figure 1 is a side elevation. Fig. 2 is a vertical section. Fig. 3 is an end elevation. Fig. 4 is a section showing the mode of adjusting rollers lengthwise upon the arbor supporting them. Fig. 5 shows a rear view of the cam for vibrating the ink-distributing roller. Fig. 6 shows a detail of the discharging apparatus.

25 *a* and *b* are the side frames of the machine, united by cross bolts or girths *c*, *d*, and *e*.

30 *f* is the impression-cylinder, which is opposed to the cylinder *g*, having the printing form or plate *h* attached. A segmental portion (marked *i*) of the impression-cylinder *f* is made of greater radius than the other parts, on which part *i* the envelopes are carried and opposed to the printing-form *h*. The other portions of less radius clear the form *h* as they rotate. The radius of the segment *i* should be a multiple of the radius of the printing-form *h*, and they are compelled to turn with the same circumferential velocity by gear-wheels *j* and *k*, meshing into each other and respectively fastened on the shafts *l* and *m* of the impression-cylinder *f* and the printing-cylinder *g*.

45 Ink is applied to the form *h* by rollers *n*, receiving ink from the cylinder *o*, which is kept constantly supplied with ink from a vibrating roller *p*, continuously contacting with and rolling and also moving lengthwise against a roller *q* and intermittently contacting with the roller *r* of the ink-fountain *s* and with the cylinder *o*. A roller *41*, vibrating

and rolling on the cylinder *o*, evenly distributes the ink thereon.

The entire inking apparatus above described works in bearings formed in side frames *t* and *u*, resting upon the frames *a* and *b* and also the ink-fountain *s*, and are secured thereto by dovetail slides *v v*, so as to be easily and readily detached for cleaning and as readily replaced.

60 The envelopes to be printed are placed with their lapels downward and toward the impression-cylinder *f* in a skeleton box *w*, having an open top and slots *x* and *y*, respectively, on the front and rear sides close to the bottom *z*.

65 Through the slots *x* and *y* blades *1* reciprocate and engage the flap of the lowest envelop, pushing the edge of the envelop through the slot *y* under the roller 2 and against the segment *i* of the cylinder *f*. The envelop acquires the velocity of the cylinder *f* and is instantly gripped by nippers 3 on an arbor 4, turning with the cylinder *f* and operated by a stationary cam 5. The envelop passes under the printing-form *h* and receives an impression therefrom and after passing under the cylinder *i* is released from the nippers 3, guided and passed on by rollers 6, 7, and 8 and guides 9 in front of a reciprocating plunger 10, which deposit it in an upwardly-inclined trough 11 between springs 12, which are opened by the plunger 10 as it passes the envelop in, but close on the envelop and retain it in the box by shoulders 13 on the springs.

70 The opening of the springs 12 is caused by projections 14, attached to the sides of the plunger 10 back of the face contacting with the envelop. These engage the inclined ends 15 of the spring 12. When the ends 15 have been passed by the projection 14, the springs 12 close in and hold the envelop, and the projections 14 on the returning motion of the plunger pass outside of the inclined ends 15, which then spring inwardly and upon the complete return of the plunger resume their original position ready to repeat the operation. The rollers 6, 7, and 8 bear on the end margins of the envelop and are made adjustable upon their arbors 32, 33, and 34 in the manner depicted in Fig. 4. Each of the rollers is formed with a tapering central hole 35, in which fits a conical sleeve 36 of less length

85 90 95 100

than the thickness of the roller and having screw-threaded extensions 37 and 38, upon which are fitted nuts 39 and 40. The sleeve 36 is slit through upon one side and has lengthwise kerfs formed in it at several points in its circumference, so that it is contractible when the nut 40 is screwed tightly against the side of the roller. Then the sleeve and roller are bound tightly to the arbor. Upon unscrewing the nut 40 and screwing the nut 39 against the roller the sleeve is loosened in the roller and upon the arbor and can be moved lengthwise on the arbor into another adjustment.

The reciprocating motion of the plunger is derived from a connected lever 16, operated by a connecting-rod 17 and a crank 18 on the shaft *l*.

The reciprocating motion of the blades 1 is imparted to them from a cam 19 on the shaft *l*, operating a lever 20, to which another lever 21 is pivotally attached, and the lower end of the lever 21 is guided in an approximately right line by links 31, pivotally connected with it and with the side frames *a* and *b*. The upper end of the lever 21 is pivotally connected with a cross-bar 22, to which the blades 1 are attached, and are reciprocated in a plane parallel with the bottom of the box *w*. The form and proportions of the cam 19 should be such that at the instant the envelop is engaged by the roller 2 and segment *i* its terminal velocity should be as nearly equal as may be to that of the segment *i* and impression-cylinder *f*, so as to insure exact register.

Motion is imparted to the machine by the shaft *l* and transmitted therefrom through the wheels *j* and *k* to the inking-cylinder *o* and roller *q* by gear-wheels 23, 24, 25, and 26, and the motion to vibrate the roller *p* on the arbor of the roller *q* is transmitted by a rod 27, connecting the lever 28 (supporting the roller *p*) with the upper lever 16. The vibratory motion of the rollers 41 and *g* in the direction of their axes is produced by the cams 42, (shown in Fig. 5,) engaging in a groove 43 in collars 44 on the arbors 41 and 9. The roller *r* of the ink-fountain *s* is turned by a pawl 29, operated by the lever 28 and engaging the teeth of a ratchet-wheel 30 on the arbor of the roller *r*. The number of teeth of the wheels connecting the rollers *p* and *q* are preferably unequal prime numbers, and the circumferences of these rollers are of like proportions to avoid the same points in the surfaces thereof making frequent contact.

It will be observed that the printing-form is rolled or supplied with ink several times between each impression, so that it is certain to be completely and evenly inked, that the motions of all parts are positive, and that the motion of the envelops is edgewise throughout until they are deposited before the plunger 10, and the motion of the plunger is made as short as practicable, so that high velocity and rapid work are practicable with perfect quality of work.

We do not limit ourselves to the proportions shown between impression-cylinder and the form-bearing cylinder.

Having described our invention, what we claim is—

1. In a machine for printing envelops, a feeding mechanism consisting of a slotted box, blades arranged to reciprocate through said box, an impression-cylinder, a roller adapted to enforce contact of an envelop with said cylinder in combination with means for reciprocating said blades with a terminal velocity substantially equal to the peripheral velocity of the impression-cylinder, as set forth.

2. In a machine for printing envelops an impression-cylinder provided with nippers adapted to hold and release envelops, means of closing and opening said nippers, in combination with rollers and guides, arranged to convey envelops from said impression-cylinder, a delivering-trough provided with springs arranged to receive and retain envelops, and a reciprocating plunger arranged to open said springs to admit envelops to said trough, and to close said springs, before retracting the plunger from the trough, as and for the purpose set forth.

3. In a machine for printing envelops, an upwardly-inclined delivering-trough, a reciprocating plunger and means of reciprocating said plunger to and from the lower end of said trough, a series of rollers and guides arranged to present envelops before said plunger, and a series of hooked springs attached to the lower end of said trough, in combination with extensions of said springs, and projections on said plunger arranged to open said springs upon entering the trough, and to close said springs in retiring therefrom, as and for the purpose set forth.

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