

No. 659,797.

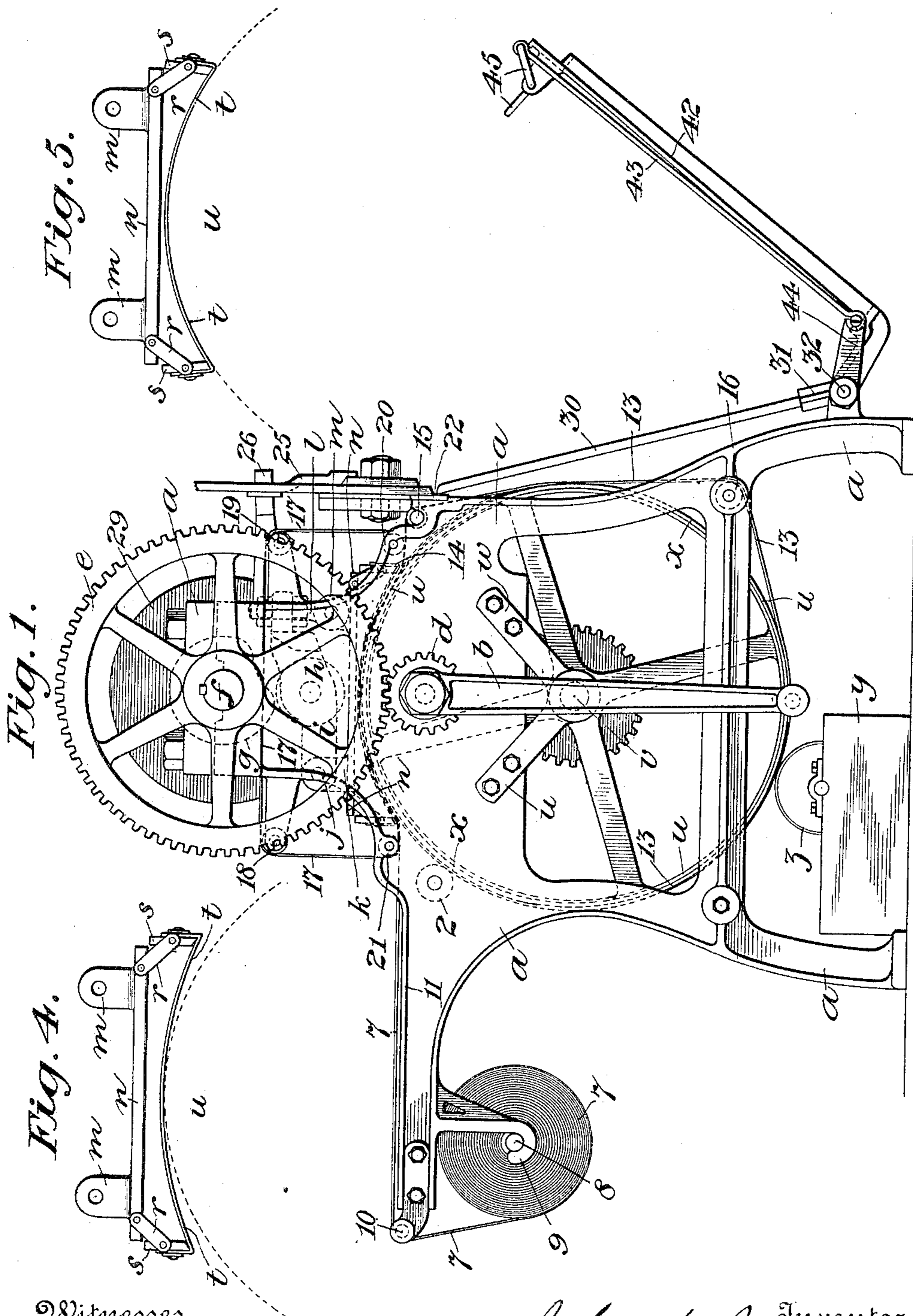
Patented Oct. 16, 1900.

J. A. JONES.  
PRESS COPYING MACHINE.

(Application filed Jan. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
C. W. Smith  
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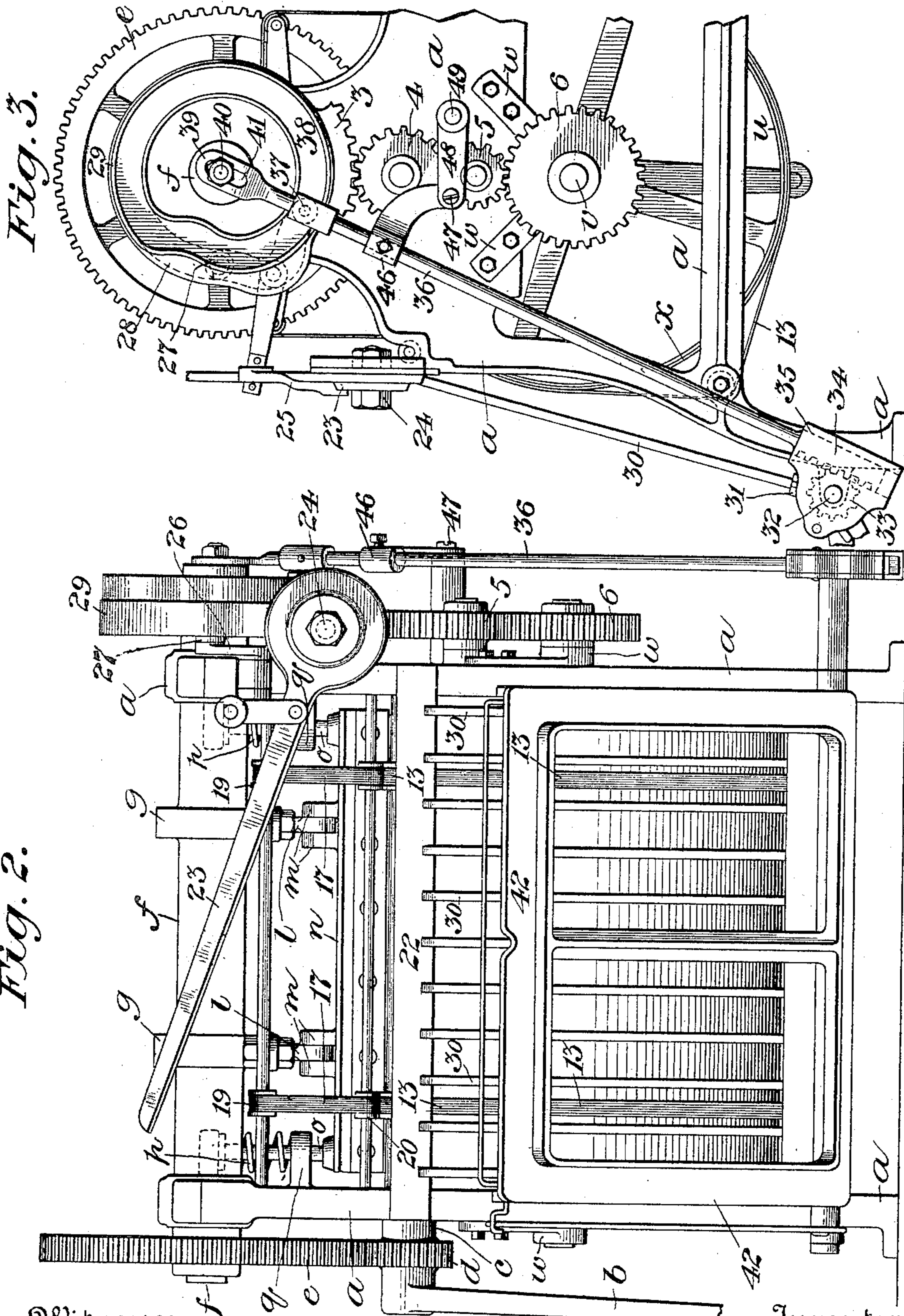
Inventor  
John A. Jones.  
By his Attorney  
Phillips Abbott.

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(No Model.)

2 Sheets—Sheet 2.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN A. JONES, OF NEW YORK, N. Y.

## PRESS COPYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,797, dated October 16, 1900.

Application filed January 10, 1900. Serial No. 1,016. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. JONES, a citizen of the United States, residing at No. 95 Liberty street, in the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented a new and useful Press Copying-Machine, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine. Fig. 2 illustrates a front elevation thereof. Fig. 3 illustrates an elevation of the side of the machine opposite to that shown in Fig. 1, those parts only being shown which more particularly illustrate the gearing, &c., involved. Fig. 4 illustrates a side view of the pressure-platen in its elevated or inoperative position. Fig. 5 illustrates a view the same as Fig. 4, the platen being depressed and in its operative position.

This present invention embodies to a certain extent features for which Letters Patent of the United States have recently been allowed to me. In the practical manufacture of machines under the said former invention I have ascertained that although the invention thereof is valuable and certain parts of it are embodied by me in this present invention nevertheless the former machine is capable of very great improvement, whereby the mechanical operations involved are rendered much more certain, reliable, and durable than in the former machine. Those improvements will be found fully described and claimed below.

Referring to the drawings hereof, *a* illustrates the frame of the machine. It preferably comprises two side frames and a cross-bar at the top, with suitable bracing-rods, as shown.

*b* is a crank which actuates the machine. It is mounted upon an axis *c*, upon which is a pinion *d*, which meshes into a gear-wheel *e*. The gear *e* is mounted upon a shaft *f*, which passes through the machine from side to side and is journaled on the upper ends of the side frames.

*g g* are two cams mounted upon the shaft *f*, which engage with rollers *h*, (see Fig. 1,) each mounted in a lever or frame *i*, supported at one end by a pivotal connection *j* upon studs *k* and at the other end by large links *l*, piv-

oted at *m* to studs corresponding to the studs *k*. All four studs which thus support the two levers rest upon the platen *n* of the machine, which is a horizontal plate of the requisite stiffness.

*o o* (see Fig. 2) are posts extending upwardly from the platen *n*, which enter recesses in the cross-frame *a* at the upper part of the machine. *p p* are springs which encircle these posts and normally elevate the platen. The posts pass through studs *q*, formed on the side frames, whereby the platen is guided and true vertical movement secured.

Referring to Figs. 4 and 5, *r r* are links arranged in pairs at each side of the platen. They are pivoted to the platen *n* at one end and at their other ends to a transverse plate or bar *s*, and connected to this plate is a piece of sheet metal *t*, (preferably brass or equivalent material and preferably elastic or resilient,) having a normal curvature greater than that of the arc of the revolving drum herein-after to be explained, so that when not under pressure—in other words, when elevated and not in operative condition—this plate *t* will normally assume the position shown in Fig. 4; but when depressed under the pressure of the cams *g* and coacting mechanism it will make contact first at its central portion with the drum *u* and then, the downward movement being continued, it will bend to conform to the arc of the drum, so that the ends of the flexible plate will likewise hug down snugly upon the drum, the transverse bars *s* tilting somewhat upon their axes during this operation, and when the final squeeze takes place the pressure of the plate *t* upon the drum or upon the intervening letter and paper, as will be hereinafter explained, is uniform throughout, so that a perfect impression is obtained.

*u* is the drum. It is mounted upon an axis *v*, which latter is supported upon frames *w w*, connected with the side frames of the machine. This drum is perfectly concentric and is covered exteriorly with a layer of absorbent material *x*. This material may be cloth of any kind or felt or absorbent leather.

*y* is a tank containing water, in which revolves a roller *z*, which makes contact with the periphery of the drum, or rather with the

absorbent material covering it, whereby moisture is conveyed to the absorbent covering which is at all times suitably charged with it.

2 is a roller which runs in contact with the surface of the material covering the drum and expels surplus moisture, acting as a wringer therefor.

Connected with the main shaft *f* of the machine there is a segment of a gear 3, (see Fig. 3,) which at each revolution of the machine intermittently engages with a pinion 4, which in turn meshes into a pinion 5, which likewise in turn engages with a gear 6, and the relation of these several gears is such that at each revolution of the main shaft the drum *u* is caused to rotate through a partial revolution, the degree of its movement being dependent upon the size of the paper upon which the letter or other document is written. In the example shown in the drawings this movement is about nine or ten inches, and I provide different gearing, so that the degree of its movement may be altered at pleasure, and the machine is so timed that during the descent of the platen *n*, carrying the flexible compression-plate *t*, there is no movement of the drum.

7 is a coil of paper of the kind adapted to take press-copies, which in order to designate it I will hereinafter call the "tissue-paper." This is mounted upon an axis 8, supported in bearings 9. The paper passes from this over a roller 10, and thence over a table 11 and under a little roller 21.

13 13 are endless tapes (see Figs. 1 and 2) which pass over the drum near its respective ends and leave it at about the point marked 14, passing thence under a roller 20 and thence horizontally over a roller 15, thence downwardly, as indicated, and around another roller 16, the bearings of which may be made movable, so as to increase or diminish the tension upon the tapes 13, the arrangement being such that on a portion of its circumference the tapes rest snugly upon the surface of the drum *u*; but after they have passed the pressure-plate *t*—in fact, in that portion which is beneath the pressure-plate and before reaching the point 14—they leave the drum upon the elevation of the plate, so that the papers, the edges of which lap over these tapes, will upon the elevation of the plate be lifted from the drum and when the drum again rotates carried by the tapes out over the edge of a fixed knife, as hereinafter explained. In order that this operation may be more certain, I provide other tapes 17 17, (see Figs. 1 and 2,) which are likewise endless and pass over rollers 18, 19, 20, and 21, which are suitably mounted upon cross-shafts, as shown, and these tapes run concurrently with and are superposed upon the tapes 13 13, as shown clearly in Fig. 2, so that they hold the edges of the papers between them.

22 is the fixed blade of a cutter, which is rigidly attached to the machine.

23 is the movable blade of the cutter, which

is pivoted at 24 to some suitable support. It is actuated by a link 25, which connects with a bell-crank lever 26, the free end of which is provided with a roller 27, which works in an eccentric groove 28, made in a cam-plate 29, which is actuated by the rotation of the machine. These parts are so timed that the cutter operates just at the termination of the act of carrying the letter or other document out of the machine by the tapes, and it severs the projecting end of the tissue-paper 7 (which has duly received the impression) from the rest of the web, this projecting end of tissue-paper having been lifted from the surface of the drum by the tapes, as above described, and carried outwardly over the fixed blade of the cutter. Under the action of gravity the severed end of paper falls over a series of rods or fingers 30, which are or may be of the form usually employed in sheet-delivery apparatus. Their upper ends, as seen clearly in Figs. 1 and 2, rest against the outer surface of the fixed blade of the knife, and their lower ends are set in a transverse bar 31, which is mounted upon an axis 32, which has on one end a pinion 33, which is actuated by a rack 34, which slides through a slide-box 35, being actuated by a rod 36, which is given an up-and-down movement by a roller 37, working in an eccentric groove 38, made in the cam-block 29, before referred to. The upper end 39 of the rod is supported upon a stud 40, projecting from the axis or shaft *f*, or in any other desired manner, and a slot 41 permits the necessary longitudinal movement.

42 is a table, which may be the same as ordinarily employed in sheet-delivery apparatus, which supports the series of sheets as they are severally delivered, and 43 is a rod actuated by a bell-crank 44, which at its upper end actuates a sheet-retaining finger 45.

46 is a brace or a bracket-like support for the rod 36. It is rigidly attached thereto by a set-screw, as shown, and is pivoted at 47 to an arm 48, which is pivoted to the frame at 49, so that as the rod 36 rises and falls these two arms 46 and 48 by the pivotal action between themselves and also at the axis 49 permit free movement of the rod 36, while bracing it against the action of the cam-roller 37. The details of this delivery apparatus are unimportant.

The operation is as follows: Letters or other documents are written upon paper preferably having certain definite dimensions—that is to say, of such width as to properly engage with the tapes above referred to and of such length as preferred, excepting that the area of the printed matter upon the sheet should be not greater than the area of the pressure-platen nor the extent to which the drum moves at each operation of the apparatus. The end of the paper 7 is uncoiled from the reel, passed over the roller 10, and thence introduced between the two tapes at the front of the machine, the machine having been previously operated so that the absorbent material upon

the surface of the drum has become properly moistened. Thereupon the letters or other documents, sheet by sheet, are placed face down upon the web of paper, (which being dry at this section has the requisite strength,) and while turning the crank with one hand the operator sees that the letter or sheet of paper passes into the machine between the two tapes and beneath the roller 21. The operation of the gears which rotate the drum carries the letter and the tissue-paper into the machine beneath the platen, as shown in Fig. 4. The flexible pressure-plate as there shown just clears the surface of the drum, and the letter and the tissue-paper are maintained in proper relation to each other by the action of the tapes at both sides of the drum, between which the edges of the papers are securely held. Upon further turning of the crank the motion of the drum ceases, and the platen, carrying the flexible pressure-plate with it, descends. The pressure-plate first presses the central portion of the letter-paper upon the tissue-paper and the underlying damp surface of the drum. Thereafter the continued downward movement of the platen causes the ends of the flexible pressure-plate to move downwardly upon the drum in such manner as to iron out and smooth the letter-paper lying between them, and, finally, when the ultimate pressure is applied the whole surface of the letter is pressed with uniform and considerable pressure down upon the damp surface of the drum in such manner as to make a perfect impression of the writing or printing upon the tissue-paper. Thereafter by still continued turning of the crank the platen rises again, carrying with it the curved pressure-plate, which in its movement gradually straightens out from the position shown in Fig. 5 to that shown in Fig. 4 by a reversal of the movements just above described. During this upward movement of the pressure-plate the tapes hold the letter and tissue paper upon the drum should they have a tendency to rise with the platen. After the pressure-plate is freed from contact with the drum the further turning of the crank causes the gear to engage again in such manner that the drum is further rotated, and the letter and tissue paper, guided and conducted by the tapes, move forwardly again until the point is reached where the lower tapes surrounding the drum leave its surface and move outwardly toward the fixed blade of the cutter. These tapes at this point lift the tissue-paper and also the superposed letter or other sheet from the drum and carry them both forward in such manner that adjacent to the fixed blade they leave the tapes and project outwardly over it. The letter or other sheet is then picked off or drops off, as the case may be, frequently, however, sticking to the tissue-paper and falling with it into the delivery device, to be afterward separated, and immediately thereafter the movable blade of the cutter operates, and the project-

ing end of the tissue-paper, bearing the impression of the printed or written matter, is severed from the remainder of the strip and drops (with or without the letter-paper, as the case may be) upon the automatic filer, which immediately thereafter operates and transfers the severed sheet backwardly against the table or board. In this manner the letters or other sheets are successively manipulated, and at the end of a day or other desired period the sheets bearing impressions are taken from the delivery device and bound or otherwise prepared for filing.

It will be obvious to those who are familiar with this art that many modifications may be made in the invention without departing from the essentials thereof. For example, the means employed for obtaining the movements of the several parts may be greatly varied; also, the specific arrangement of the parts. Also it is possible to make a machine which will operate with reasonable satisfaction by having the pressure-plate a solid or non-flexible surface, particularly if it be lined with soft material, so that a comparatively-uniform pressure be secured. I do not favor this form, however, because after very extensive experimentation I have found that the flexible pressure-plate is a marked advantage over any form known to me. I do not limit myself, however, to such a pressure-plate, although claiming that as my preferred construction. Also even if a flexible pressure-plate be employed obviously other means than those shown by me may be employed for supporting it; but I have found those described useful and desirable. Also the method of applying moisture to the tissue-paper and of arranging the tapes for conducting the papers may be varied. Indeed, it is not essential that the tapes should be employed, because with care and a little annoyance at times the papers will travel over and may be removed from the drum at the delivery side of the machine without employing any tapes. I however greatly prefer them, because they are a marked improvement in such machines. In short, I do not limit myself in any respect to the details of construction shown.

In the claims hereof I will refer to the paper upon which the impressions are to be made as the "tissue-paper." It will of course be understood that any materials adapted to the purpose—whether it be paper (tissue or other) or other material, such as certain cloth-like fabrics upon which impressions can be taken—are included. I shall also for the sake of brevity refer to the sheets from which the impressions are taken as the "letter-paper." This term of course includes any sheet or document upon which the written or printed matter is produced—as, for instance, letters, bills, invoices, legal documents, telegrams, maps, drawings, and the like.

Having described my invention, I claim—

1. The combination of an intermittently-rotating drum, an absorbent material carried

by the drum, an intermittently-operating pressure-plate actuated during the time the drum is at rest, means to introduce the tissue-paper and the letter-paper between said parts, and means to moisten the absorbent material, for the purposes set forth.

2. The combination of an intermittently-rotating drum, an intermittently-operating pressure-plate actuated during the time the drum is at rest, absorbent material permanently attached to the drum, and means to moisten said material, for the purposes set forth.

3. The combination of an intermittently-rotating drum, absorbent material permanently attached to the drum, means to moisten said material, an intermittently-operating pressure-plate actuated during the time the drum is at rest, and tapes to guide the papers, for the purposes set forth.

4. The combination of an intermittently-rotating drum, absorbent material permanently attached to the drum, means to moisten said material, an intermittently-operating pressure-plate, and means for lifting the tissue-paper and the letter-paper from the drum after the impression is made, for the purposes set forth.

5. The combination of an intermittently-rotating drum, absorbent material permanently attached to the drum, means to moisten said material, an intermittently-operating pressure-plate, means for lifting the tissue-paper and the letter-paper from the drum and to deposit the same upon the cutting device, and the cutting apparatus itself, for the purposes set forth.

6. The combination of an intermittently-rotating drum, absorbent material permanently attached to the drum, means to moisten said material, an intermittently-operating pressure-plate, severing devices for cutting the paper, and means to guide the paper between the drum and the pressure-plate combined and arranged in such manner as that when the drum is at rest the pressure-plate operates, the drum then moves and then the cutter operates, for the purposes set forth.

7. The combination of an intermittently-rotating drum, absorbent material permanently attached to the drum, means to moisten said material, an intermittently-operating pressure-plate, an intermittently-operating cutter, and an intermittently-operating sheet-delivery device, the said devices being so timed that they successively operate in the order named, for the purposes set forth.

8. The combination of an intermittently-rotating drum, absorbent material permanently attached to the drum, means to moisten said material, an intermittently-operating pressure-plate, and means to conduct the end of a coil of tissue-paper between the drum and the pressure-plate, for the purposes set forth.

9. The combination of an intermittently-rotating drum, absorbent material perma-

nently attached to the drum, means to moisten said material, an intermittently-operating pressure-plate, a table over which the tissue-paper is fed, and means to conduct the tissue-paper, in conjunction with letter-paper, between the drum and the pressure-plate, for the purposes set forth.

10. The combination of an intermittently-rotating drum, absorbent material permanently attached to the drum, means to moisten said material, means to expel the excess of moisture from the absorbent material, an intermittently-operating pressure-plate, and means to lift the tissue and the letter papers from the drum after the impression is made, for the purposes set forth.

11. The combination of an intermittently-rotating drum, absorbent material on the drum, means to moisten said material, means to expel the excess of moisture from the absorbent material, an intermittently-operating pressure-plate, means to grasp and feed the tissue and letter papers into the machine and to lift them from the drum after the impression is made and to conduct them between the blades of a cutting device, and said cutting device itself, for the purposes set forth.

12. In a copying-press a pressure-plate made of flexible material means which yieldingly support the pressure-plate whereby it is adapted to automatic adjustment to the surface which resists the pressure, for the purposes set forth.

13. In a copying-press a pressure-plate composed of yielding material, means which yieldingly support the pressure-plate whereby it is adapted to engage with the surface that resists the pressure at its central portion first and then automatically adjusts itself at its ends, for the purposes set forth.

14. In a copying-press a rotating drum, an arc of which constitutes the pressure-resisting surface, a pressure-plate made of yielding material, means to yieldingly support the pressure-plate whereby it may adapt itself to the contour of the pressure-resisting surface, and means to reciprocate the pressure-plate, for the purposes set forth.

15. In a copying-press, a rotating drum, an arc of which constitutes the pressure-resisting surface, a yielding pressure-plate formed of resilient material which normally describes the arc of a circle larger than that of the drum, means to yieldingly support the pressure-plate, and means to reciprocate the same, for the purposes set forth.

16. In a copying-press a pressure-plate, adapted to coact with a curved resisting-surface, made of resilient material yieldingly supported at two edges, whereby it may when under pressure automatically adjust itself to the contour of the pressure-resisting surface, for the purposes set forth.

17. In a press copying-machine, endless tapes or belts arranged in pairs adapted to receive and hold the tissue-paper between them, means to intermittently move said belts so

that they will guide and feed the tissue-paper between the pressure-applying surfaces, said belts being adapted to separate the tissue-paper from the pressure-applying surfaces after  
5 the impression is made, for the purposes set forth.

18. In a press copying-machine, endless tapes or belts arranged in pairs adapted to receive and hold the tissue-paper between them,  
10 and means to move said belts so that they will

guide and feed the tissue-paper between the pressure-applying surfaces, for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 26th day of 15  
December, 1899.

JOHN A. JONES.

Witnesses:

PHILLIPS ABBOTT,  
D. SOLIS RITTERBAND.