(No Model.) 6 Sheets—Sheet 1.

A. C. NORTH.

PRINTING MACHINE.

No. 489,981. Patented Jan. 17, 1893.

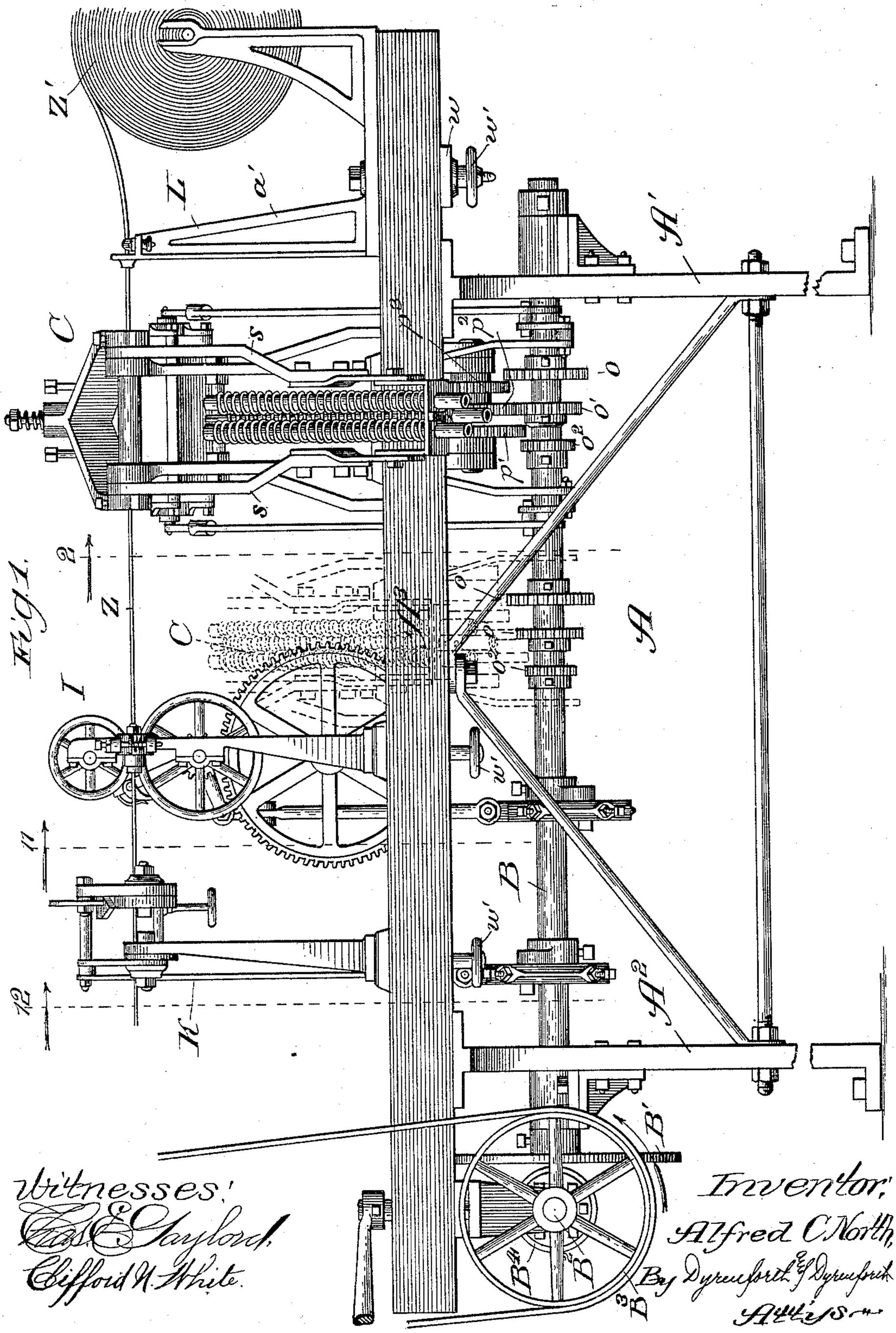

Fig. 1.

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Clifford N. White.

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Attys.

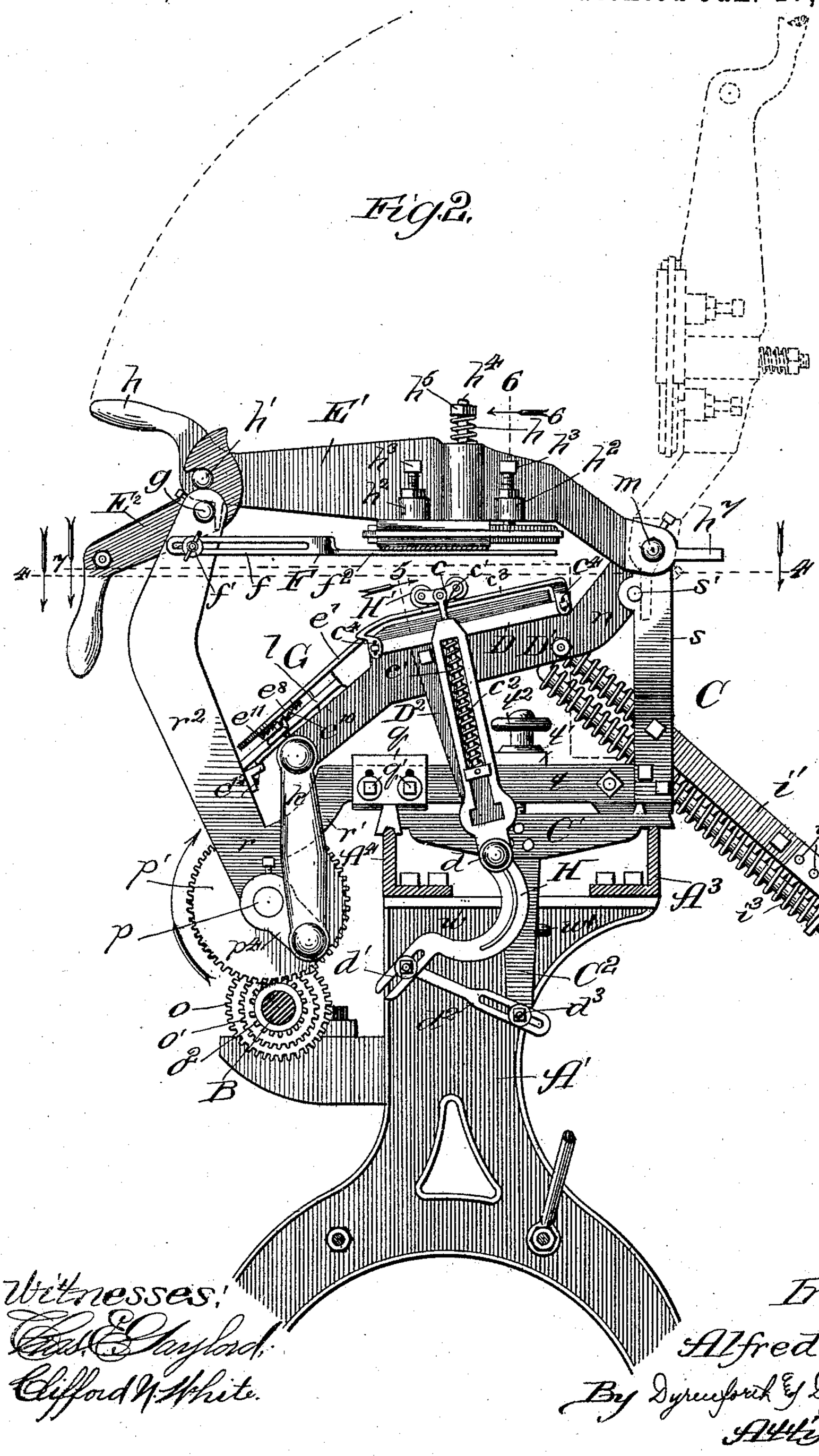
(No Model.) 6 Sheets—Sheet 2.

A. C. NORTH.

PRINTING MACHINE.

No. 489,981. Patented Jan. 17, 1893.

Fig. 2.



Witnesses:
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(No Model.) 6 Sheets—Sheet 3.

A. C. NORTH.

PRINTING MACHINE.

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Fig. 3.

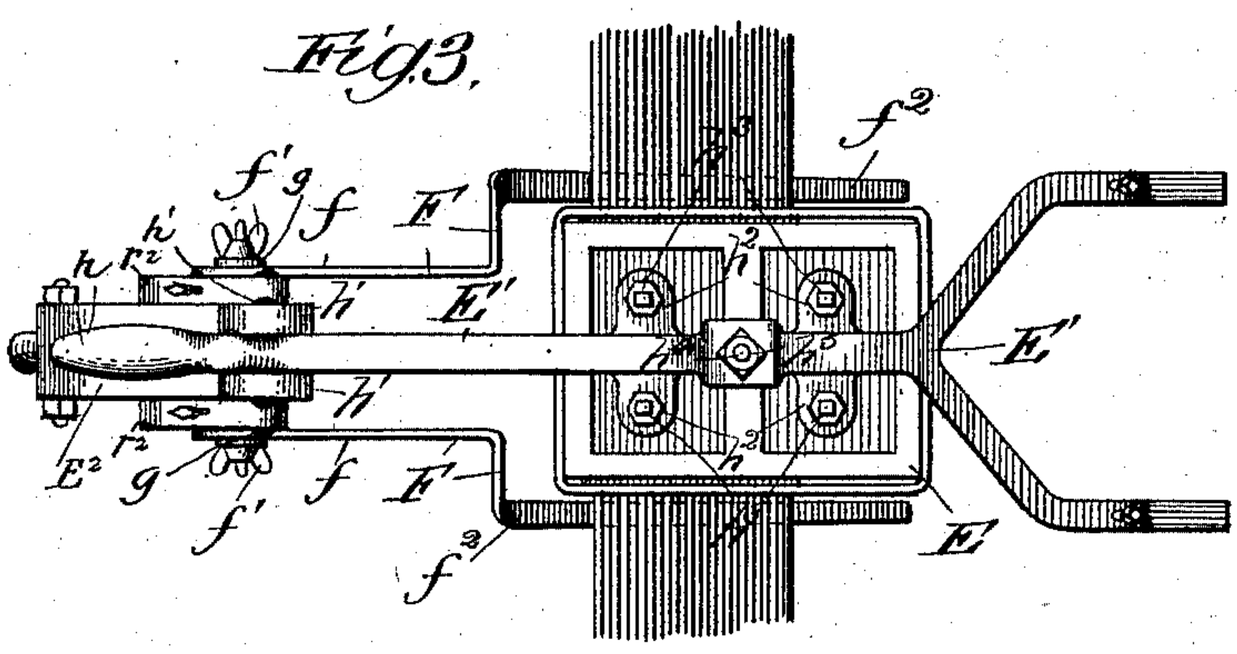


Fig. 4.

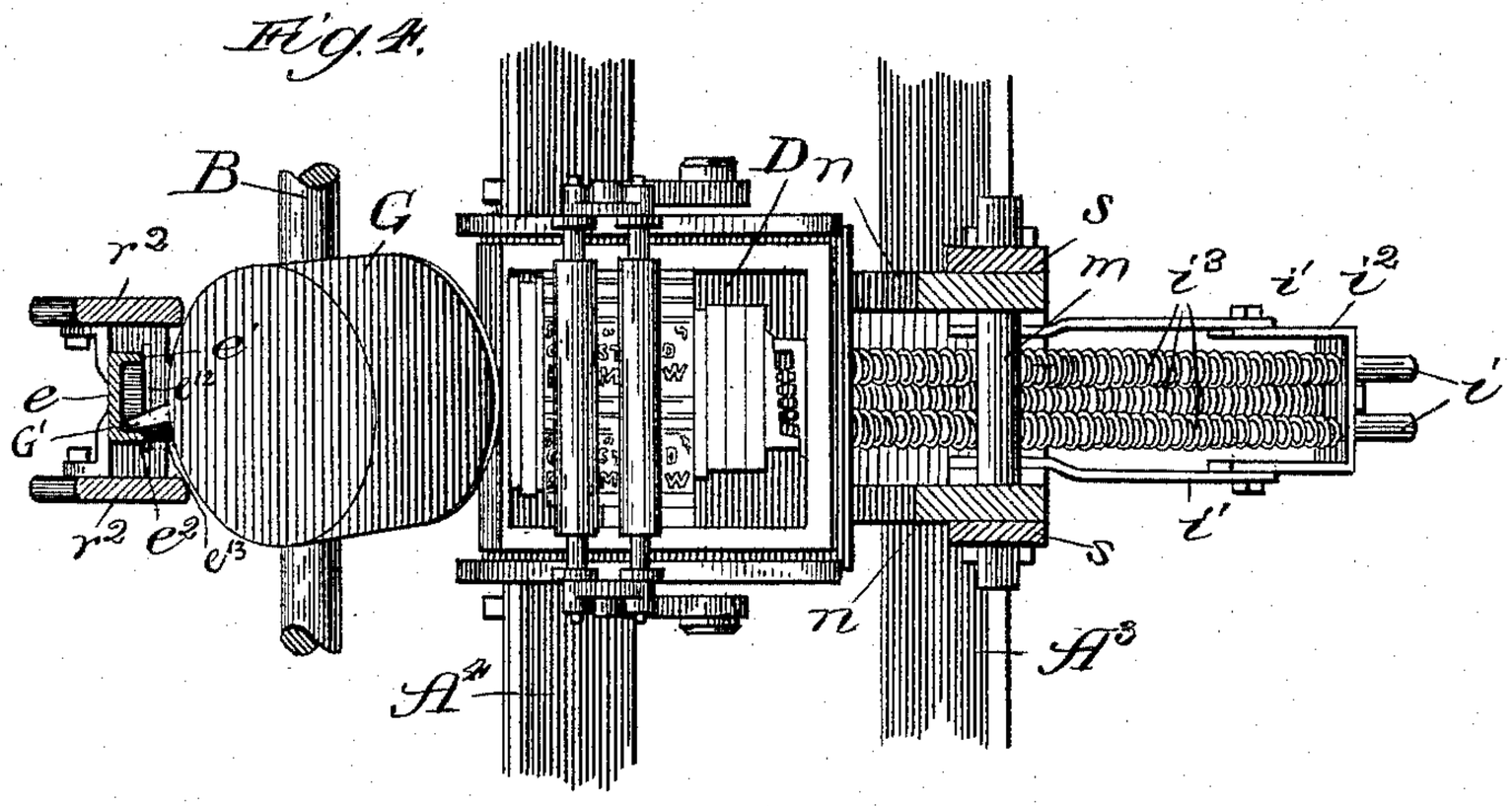


Fig. 5.

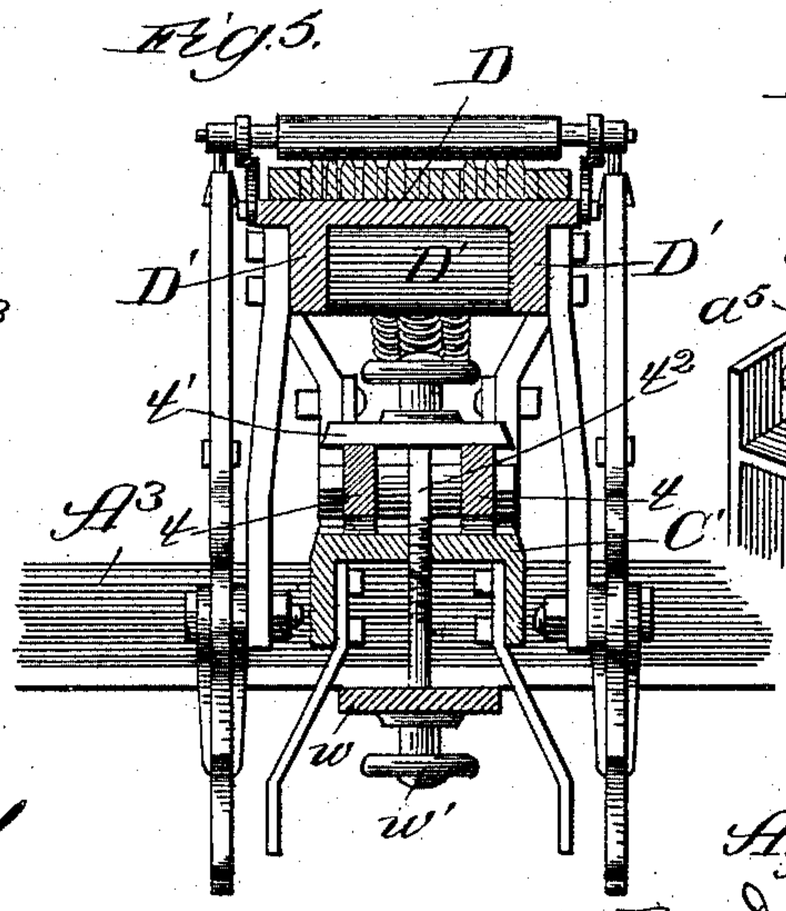


Fig. 6.

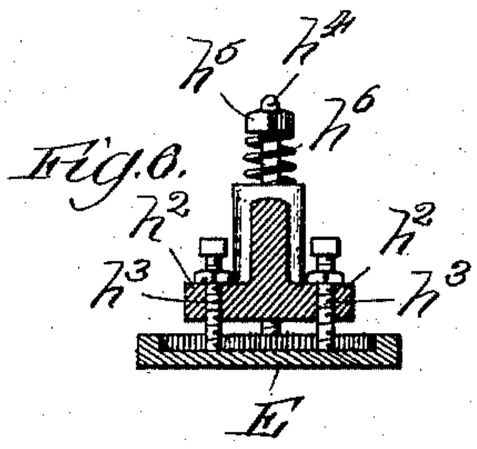
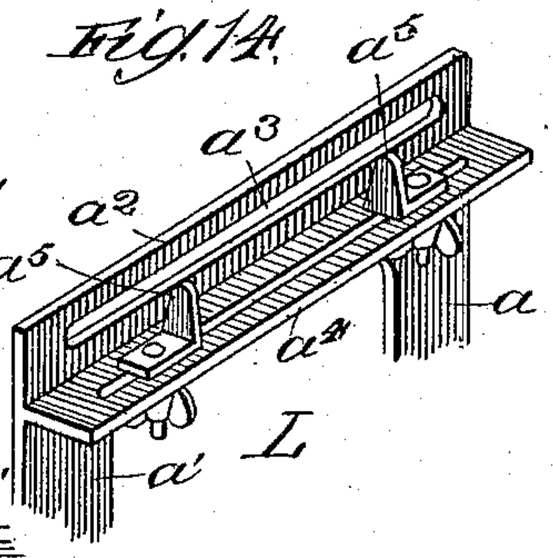


Fig. 14.



Witnesses:
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(No Model.) 6 Sheets—Sheet 4.

A. C. NORTH.

PRINTING MACHINE.

No. 489,981. Patented Jan. 17, 1893.

Fig. 7.

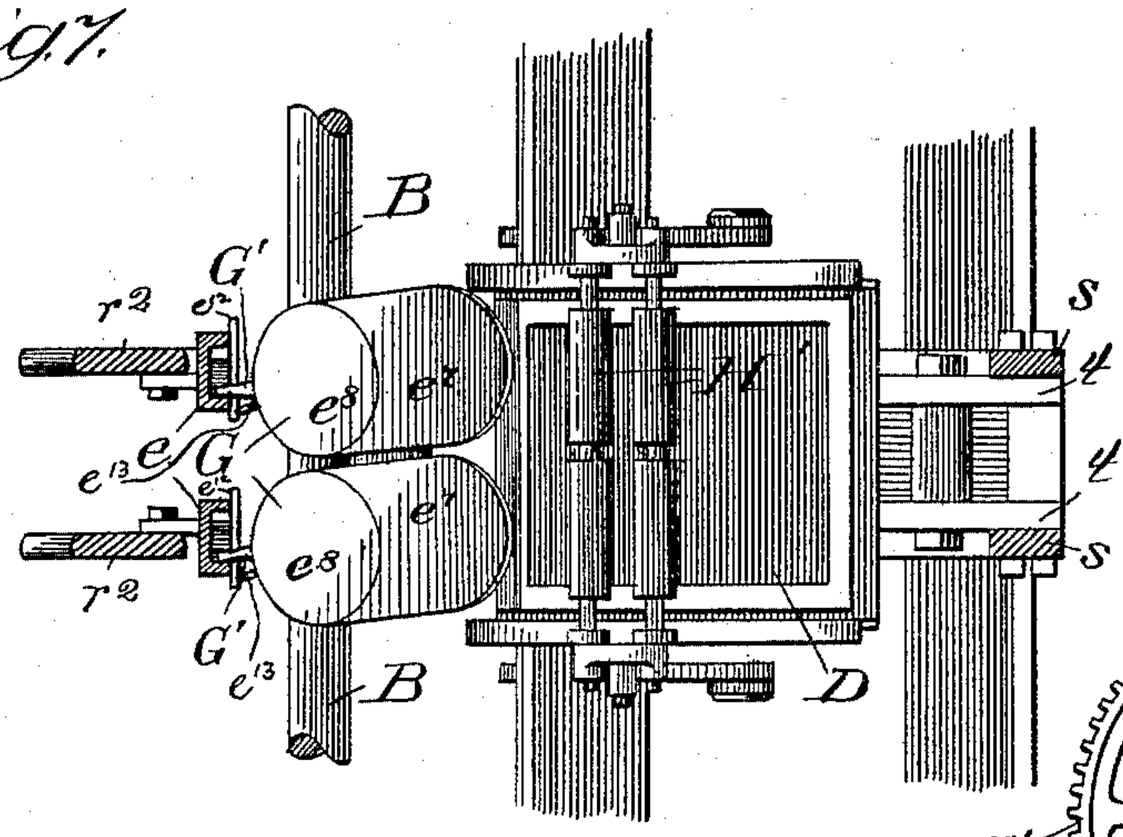


Fig. 13.

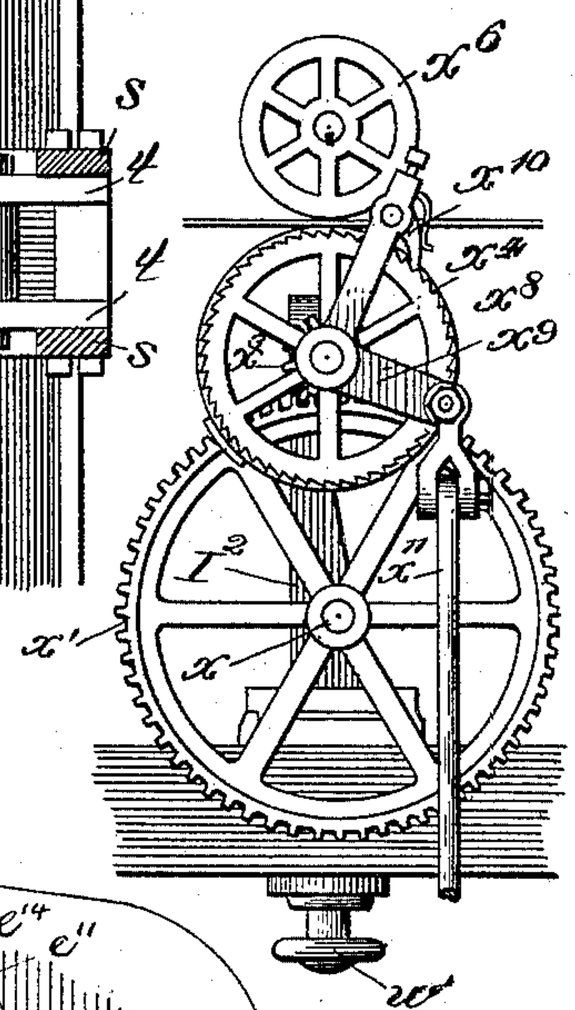


Fig. 8.

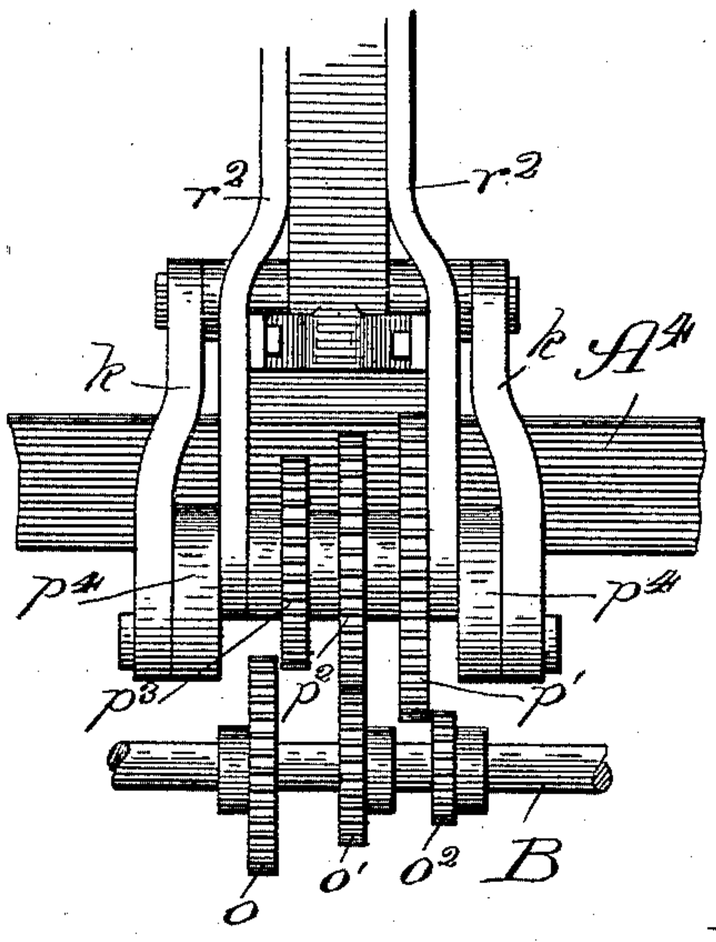


Fig. 9.

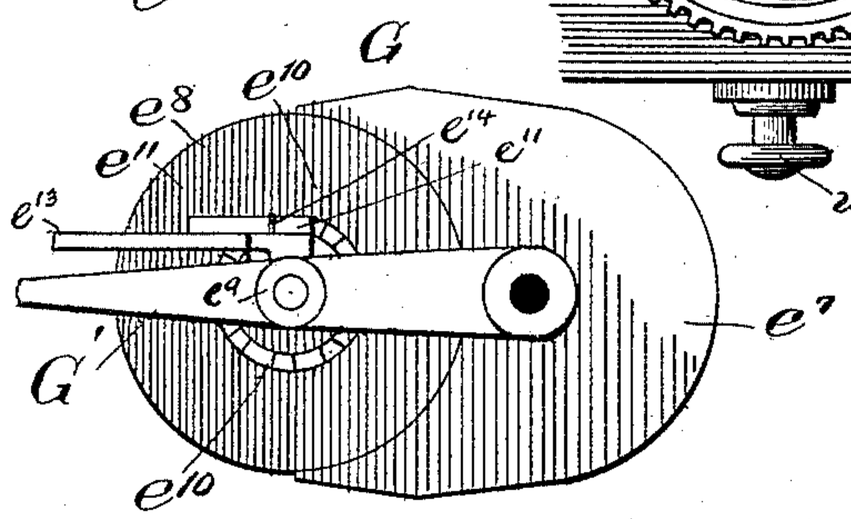
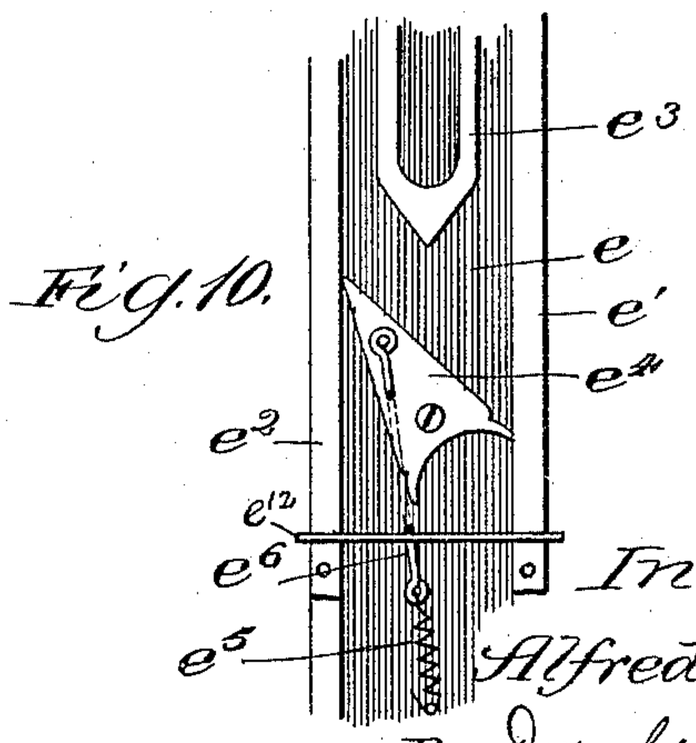


Fig. 10.



Witnesses:
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(No Model.) 6 Sheets—Sheet 5.

A. C. NORTH.

PRINTING MACHINE.

No. 489,981. Patented Jan. 17, 1893.

Fig. 12.

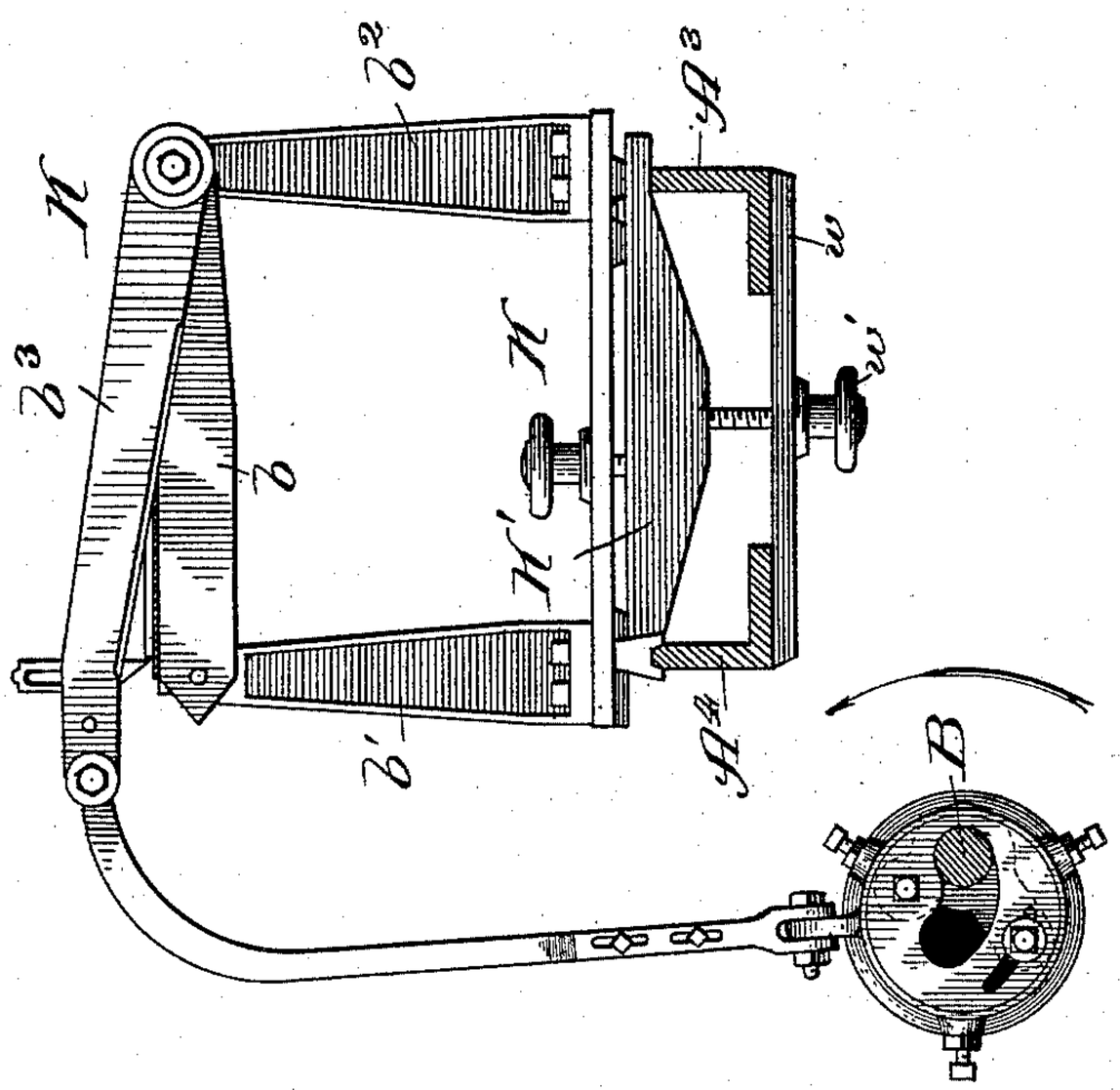

Fig. 11.

Witnesses:
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(No Model.) 6 Sheets—Sheet 6.

A. C. NORTH.

PRINTING MACHINE.

No. 489,981. Patented Jan. 17, 1893.

Fig. 15.

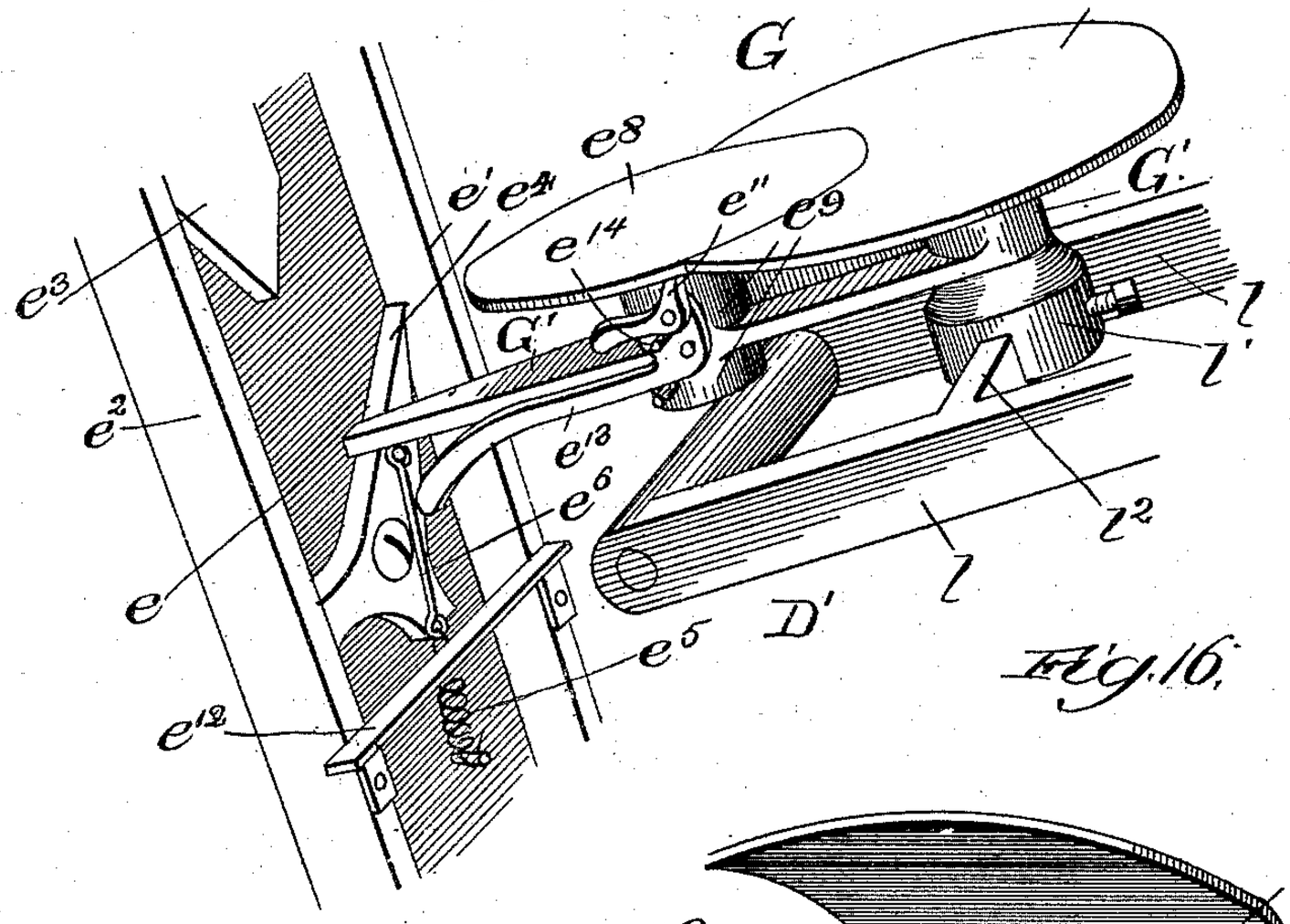


Fig. 16.

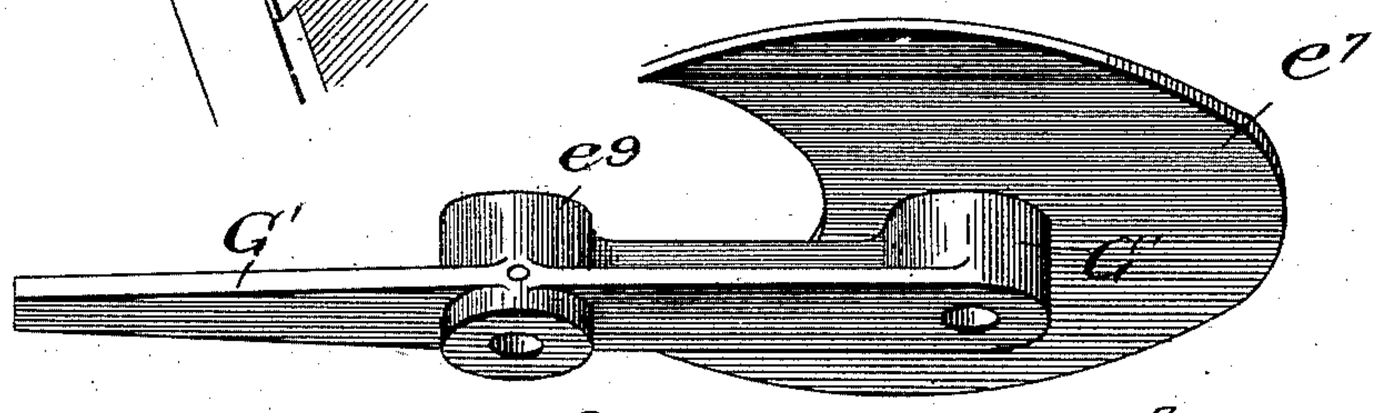


Fig. 17.

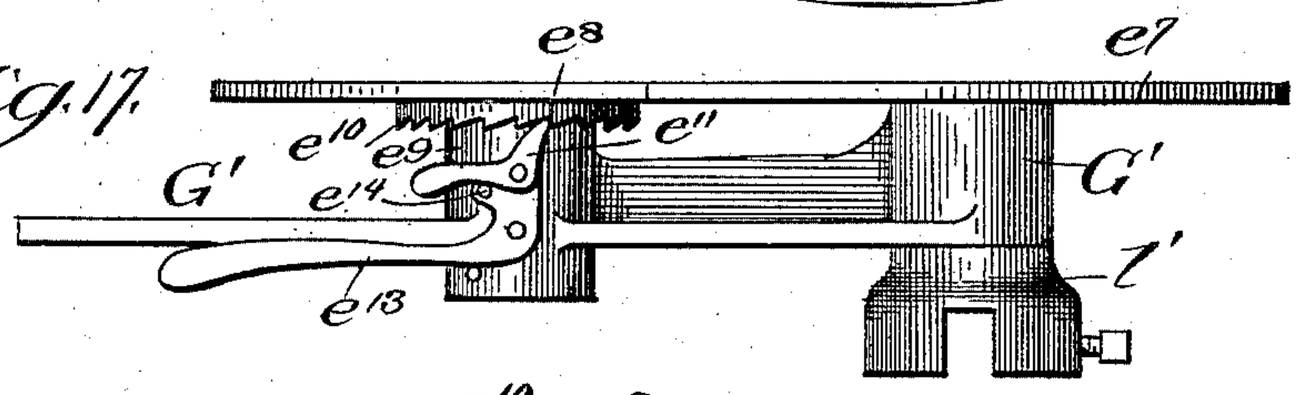
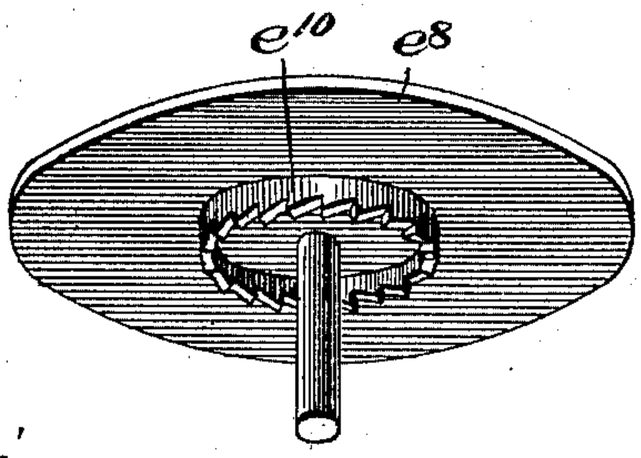


Fig. 18.



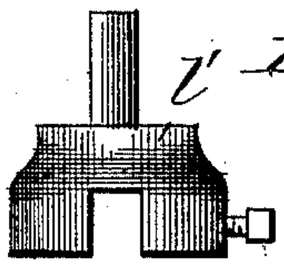


Fig. 19.

Witnesses:
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UNITED STATES PATENT OFFICE.

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PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 489,981, dated January 17, 1893.

Application filed June 22, 1891. Serial No. 397,132. (No model.)

To all whom it may concern:

Be it known that I, ALFRED C. NORTH, a citizen of the United States, residing at Benton Harbor, in the county of Berrien and State of Michigan, have invented a new and useful Improvement in Printing-Machines, of which the following is a specification.

My invention relates to improvements in oscillating printing presses generally; though more particularly to an improvement in a printing machine in which an oscillating press designed to print upon a continuous web of paper, forms a part of the machine which is also provided with mechanism for severing the web, after it has been printed, into sheets of desired size.

In the drawings—Figure 1 is a side view of a machine embodying my improvements; Fig. 2, an enlarged sectional view taken on line 2 of Fig. 1, and showing the printing press in side elevation; Fig. 3, a top-plan view of the platen, its pivotal supporting lever, and adjacent guide for the web; Fig. 4, a broken sectional plan view taken on line 4—4 of Fig. 2, and viewed in the direction of the arrows; Figs. 5 and 6 sections taken respectively on lines 5 and 6 of Fig. 2, and viewed in the direction of the arrows; Fig. 7, a section taken on line 7 of Fig. 2, and showing two inking tables; Fig. 8, a broken view illustrating in elevation the gear connection between the printing-press and driving-shaft of the machine; Fig. 9, a bottom plan view of an inking table; Fig. 10, a broken view in elevation of cam mechanism for giving an oscillatory motion to the inking table; Fig. 11, a section taken on line 11 of Fig. 1, enlarged, and showing the feed mechanism for the web in side elevation; Fig. 12, a section taken on line 12 of Fig. 1, enlarged, and showing the cutting mechanism for severing the web into sheets; Fig. 13, a broken view showing the web feeding mechanism in front elevation; Fig. 14, a broken perspective view of the guide for the web; Fig. 15, an enlarged broken perspective view of the inking-table, and the operating mechanism therefor to effect proper distribution of the ink; Fig. 16, a bottom perspective view of one part of the inking-table; Fig. 17, a side view of the inking-table detached from the machine; Fig. 18, a bottom perspective view of the rotating platform forming a part of the inking table; and Fig. 19, a side elevation of the inking-table bearing.

My principal objects are, first, so to secure the printing press upon the frame as to render it adjustable longitudinally and crosswise thereof; second, to provide for the employment of two or more of the printing presses upon the same frame, geared to a common drive shaft, and adjustable with relation to each other upon the frame, to co-operate in printing upon the web; third, to provide a support for the platen, hinged to the frame of the press in a manner which permits it to be easily displaced to give access to the bed of the press; fourth, to render the inking-roller carriers so adjustable that their throw may be regulated to diminish or increase the distance of travel of the rollers; fifth, to provide an adjustable system of gears between the drive shaft of the machine and the press, whereby the speed of the latter may be increased or diminished with relation to the other parts of the machine and two or more colors or two or more forms be printed at one time; sixth, to provide an inking table of an improved construction, having a vibrating and a rotating platform to facilitate the distribution of the ink; and, lastly, to provide a printing machine of the class named, which shall be of a comparatively simple, cheap and durable construction, adapting it to general use in a printing office.

A is the frame of the machine, provided with the supports A′ A^2, suitably braced, as shown. At the top of the frame are two horizontally extending and parallel side-rails A^3 A^4, affording a track upon which the various features of the machine are adjustably mounted, as hereinafter described.

B is a drive-shaft extending longitudinally of the frame, having its bearings in brackets in the sides of the supports A′ A^2, and provided at one end with a friction disk B′.

On the end of the frame A is a cross-shaft B^2, carrying at one end a power pulley B^3, and at its opposite end-portion a longitudinally adjustable friction pulley B^4. The shaft B^2

is journaled in a movable frame between which and the main frame is suitable shipping mechanism operative at will to throw the friction pulley B^4 into and out of engagement with the disk B', and thereby produce or stop rotation of the shaft B.

C is the frame of the printing-press which is mounted on a sliding support C'. The frame C comprises a base formed of two parallel bars *t*, firmly bolted together, provided with corresponding rigid uprights *s* at their rear ends, and corresponding rigid brackets *r* at their forward ends, each bracket being formed with a downward inclined arm *r'*, carrying an upward extending arm r^2, as shown.

On opposite sides of the base-bar *t* at the forward ends of the latter are vertically slotted adjusting plates *q*, held against the base-bars by set-screws *q'*, and resting upon the support C' at the rail A^4. Resting across the bars *t* is a loose clamping plate *t'*, affording a bearing for a clamp-screw t^2, which passes down between the bars *t* into a threaded opening in the support C'.

Extending at its ends against the undersides of the rails A^3 A^4, is a loose clamping plate *w*, affording a bearing for a clamp-screw *w'* which passes upward through the plate *w* and between the rails A^3 A^4 into a threaded opening in the support C'. The support C' may be slid along the rails A^3 A^4 and secured in adjusted position by tightening the screw *w'* which causes the rails to become firmly clamped between the support C' and plate *w;* and the frame C may be adjusted by sliding it longitudinally upon the support C', in a direction crosswise of the machine, and when adjusted it may be fastened rigidly in position by tightening the screw t^2 which causes the bars *t* to become firmly clamped between the support C' and plate *t'*.

Journaled in the brackets *r* is a shaft *p* carrying a speed altering gear, comprising a series of three cog-wheels p' p^2 p^3, of varying diameters; and on the shaft B are three adjustable cog-wheels, *o* *o'* o^2, of varying diameters, which may be tightened and loosened on their shaft by means of set screws and slid respectively into and out of mesh with the respective cog-wheels p' p^2 p^3. Thus, for example, the wheels *o* and p^3 may be of equal diameters whereby when they are caused to engage, the shaft *p* will be rotated at the same speed as the drive-shaft B. The central wheel *o'* is of smaller and the wheel p^2 of larger diameter than the wheels *o* p^3, whereby when they, instead of the central gears, are caused to engage, the shaft *p* will rotate more slowly than the shaft B. The wheel o^2 is of still smaller and the wheel p' of still larger diameter than the central wheels, and when they, instead of the others, are brought into mesh, the rotation of the shaft *p* will be correspondingly slower than that of the shaft B. In practice the relative sizes of the cog-wheels should be such that engagement of the wheels *o* p^3 will cause the shafts B and *p* to rotate with equal velocity, engagement of the wheels *o'*, p^2 will cause the shaft *p* to rotate with half the velocity of the shaft B, and engagement of the wheels o^2, p' will cause the shaft *p* to rotate with one-third the velocity of the shaft B.

When a changing of the gearing, as described, between the shafts B and *p* necessitates the increasing or decreasing of the distance between those shafts, this may be effected by adjusting the frame of the press higher or lower in the slots *q'* of the supporting plates *q*. At opposite ends beyond its bearings the shaft *p* carries crank arms p^4 extending in the same radial plane.

D is the bed of the press, on a rocking bed frame D', having parallel rearward extending arms *n* at the ends of which it is pivoted upon a shaft *m* extending between the uprights *s*, and parallel forward extending arms *l*. At the end of each arm *l* the bed-frame is connected by a pitman *k* with the crank p^4 on its respective side of the frame, whereby in the rotation of the shaft *p* the bed-frame is rocked on its pivot in the vertical plane. Extending downward and backward from the bed frame are rods *i* which in the oscillation of the bed-frame reciprocate through a guide *i'* on the frame C. Coiled about the rods *i* and confined between the bed-frame and the stirrup end i^2 of the guide are springs i^3, which resist the lowering and assist the rise of the bed-frame, and their resisting power may be so regulated as to produce a counter balance for the bed-frame. The stirrup end i^2 of the guide, has a series of bolt holes i^4, whereby it may be shortened and lengthened to increase or diminish the tension of the springs, to regulate them, as described, and secured by bolts, in adjusted position, to the sides of the guide.

E is the platen, which is carried by a vertically swinging lever E'. The lever E' is bifurcated at its rear end portion, and at the ends of the forks it is pivoted upon the shaft *m* on the support *s*. At its forward end the lever E' is formed into a handle *h*, and when the lever is swung down to the position shown by full lines in Fig. 2, it rests near its handle-portion upon a shaft *g* which extends between the arms r^2 of the support or bracket frame *r*. On opposite sides of the lever E' near the point of its contact with the shaft *g* are lugs *h'*. Fulcrumed upon the shaft *g* at opposite sides of the lever E', is a bifurcated lever E^2 having the end of its long and heavier arm formed into a handle, and the ends of its short arm formed into hooks to engage the lugs *h'*, and lock the lever E' down against the shaft *g*. The hooked ends of the lever E^2 fit closely over the lugs *h'*, and, while they may be readily disengaged by raising the lever F at its long-arm, when in engagement with the lugs, they produce a lock which holds the lever E' in place with great rigidity.

Upon the sides of the lever E' are lugs h^2 affording bearings for set screws h^3, and the

platen is provided at the center of its upper side with a threaded rod h^4 which extends upward through an opening in the lever E'. Above the lever E' the rod h^4 is provided with a nut h^5 between which and the lever is confined a stiff spring h^6, which operates to hold the platen up against the lower ends of the set screws h^3. By means of the set screws h^3 the platen may be adjusted with great accuracy.

To give access to the bed for the purpose of inserting or removing a form, the lever F is turned to disengage the lugs h', and the lever E' is swung upward on its pivot to the position indicated by dotted lines in Fig. 2, where it is stopped from swinging farther by contact of a projection h^7 on its end with a lug s' on the upright s.

F F are adjustable web sustaining guides having longitudinally slotted arms f, through which they are secured by thumb-screws f' to opposite sides of the bracket-arm, r^2, and arms f^2, which are adjusted to extend in a plane parallel with, and the thickness of the web below, the platen, at opposite sides of the latter.

The ink supplier which I prefer to provide in the form of inking table G is mounted upon a lever G', which is pivotally connected to a bearing l' secured to a bar l^2 extending between the arms l of the frame D'. The lever G' and inking-table oscillate from right to left on the bearing l'.

Mounted between the bracket arms r^2 is a plate e having flanged edges e' e^2. Midway between its edges the plate is provided with a stationary cam e^3 pointing downward, and, just below the cam e^3, with a pivotal pointed switch e^4 having its pointed end upward and a wide end below the pivot. A spring e^5 is connected at one end to the center of the plate e below the switch, and at its opposite end, through the medium of the rod e^6, pivotally to the switch near the point of the latter. The spring resists turning of the point of the switch from either side toward the center of the plate, and causes the point when turned from either direction past the center to spring to the adjacent side of the plate e. The forward end of the lever G' extends between the sides e' e^2 of the plate e, and in its downward oscillation strikes the switch and turns it. In its upward oscillation the end of the lever G' moves the switch, without turning it past its center whereby it springs back to its former position, and operates when the lever descends again to direct it across to the opposite side of the plate e. Thus in operation, as the bed-frame falls and rises the lever G' descends along the side e^2, for example, is directed by the switch across to the side e', turns the switch, ascends along the side e', then descends again along the side e', is directed across to the side e^2, turns the switch and rises on the side e^2, &c.

The inking table G, comprises a platform e^7 firmly secured to the end of the lever G' and a rotary disk e^8 pivoted on the lever at e^9. The disk and platform fit together as shown to produce a substantially continuous table. On the underside of the disk e^8 is a circular rack e^{10}.

Pivoted upon the sides of the bearing e^9, on the lever G' is a lever e^{13}, having a long arm, which extends beyond the edge of the platform e^8, and carrying a pawl e^{11} which engages the rack e^{10}. The pawl e^{11} is pivoted loosely upon the end of the short arm of the lever e^{13}, and rests at one end against a pin e^{14}, carried by the latter, all as clearly shown in Figs. 15 and 17. On the plate e in the path of the long arm of the lever e^{13} is a projecting plate e^{12} against which, in the descent of the bed-frame, the lever strikes and is thereby turned upward on its pivot. As the lever e^{13} strikes the plate e^{12} and swings upward, its pin e^{14} turns the pawl e^{11}, causing the latter to engage a tooth of the rack e^{10}. The engagement of the pawl with the rack is in the nature of an impact, which drives the disk e^8 around causing it to rotate upon its bearing and wipe across the pawl, until stopped by friction or the engagement with it of the ink-rollers, as hereinafter described.

Extending downward from opposite sides of the bed-plate D' are arms D^2, and pivoted between their ends at d to the lower ends of the arms D^2, are roller-carrying levers H. Below the pivotal connection d each lever H is bent, as shown in Fig. 2, and provided with a slot d' in its end. On each side of the support C' is a downward extending arm C^2 affording at its lower end a bearing for a forward extending longitudinally slotted rod d^2. The rods d^2 are pivotally secured through their slots to the bearings by cap-screws d^3, being adjustable thereon longitudinally to the extent of the length of their slots, and they are pivotally secured in adjusted position against longitudinal movement by tightening the cap-screws. At their opposite ends the rods d^2 are pivotally and adjustably connected with the levers H at the slots d'. The rods d^2, by swinging upon the pivots at d^3, thus afford shifting fulcrums for the levers H. The rollers H' are mounted at their ends in bearings c on the ends of reciprocal rods c', in a common manner, the rods c' extending through guides on the levers H, and held down by springs c^2. The rollers H' travel on tracks c^3 at the sides of the bed, and the tracks are provided at their ends with slots c^4 through which they are secured to the bed by cap screws. The tracks may be raised and lowered to an extent limited by the length of the slots c^4, whereby they may be adjusted to compensate for shrinkage of the rollers.

In operation, the rise of the bed frame rocks the arms D^2 in a forward direction causing the levers H, owing to their pivotal engagement with the rods d^2, to be oscillated forward on their pivots d, to swing the rollers across the inking table; while the descent of the bed frame causes the levers H to be swung

backward to carry the rollers across the form. By changing the adjustment of the rods d^2 in the slots d' of the levers H, the throw of the levers H may be regulated to any desired degree; and by changing the adjustment of the rods d^2 on the arms C^2, the terminal points between which the rollers travel may be regulated. Thus the rollers may be caused to travel entirely or only part way across the inking table and the bed. As the distance through which the rollers are required to travel determines the speed at which the press may be operated, this adjustment, whereby the sweep of the rollers may be limited, is particularly desirable, because it renders possible speeding of the press, much more highly than otherwise, on small job work, such as tags, the forms of which need be caused to occupy only the forward part of the bed. In the downward oscillations of the bed-frame, after the rollers have left the inking table, the forward end of the lever G′ strikes the switch e^4 and is moved as described, causing the inking table to be oscillated alternately to the right and left, and thus facilitate the distribution of the ink.

In the construction, shown in Fig. 7, two adjacent lying oscillating inking tables G and divided inking rollers H′ are provided, for printing in two colors. The tables are mounted upon the bed frame, and a plate e, constructed as above described, is provided upon the bracket frame r for each lever G′ to move in. The operation of each table is the same as where only one table is employed, as described. The plates e are removable and replaceable, and so are the inking tables, whereby the single table and double table may be interchanged on the same press.

On the shaft B in Fig. 1 is shown a second set of gear wheels o, o', o^2, to which a second press, constructed like the one described and mounted on the frame A in the same manner, may be geared.

I is an adjustable intermittent feed mechanism for the web Z, mounted upon a sliding support I′, like the support C′ of the press, whereby it may be moved toward or away from the press on the frame A, and secured in adjusted position. The frame of the feed mechanism comprises two uprights I^2 and I^3 joined together by a cross piece I^4, and to the top of the upright I^3 is pivoted an arm I^5. Mounted in bearings on the upright I^2 is a loose shaft x carrying a cog-wheel x'. In bearings on the cross piece I^4 is a loose shaft x^2, carrying a pinion x^3, which meshes with the cog wheel x', and a feed-roller x^4. A loose shaft x^5, mounted in bearings on the arm I^5, carries a friction roller x^6 which is pressed against the roller x^4 by a spring x^7 interposed between the arm I^5 and upright I^3 beyond their pivotal connection. Also upon the shaft x^2 are a removable and replaceable ratchet-wheel x^8, which is tightened upon the shaft, and a loose bell-crank lever x^9, the latter carrying a spring pawl x^{10} which engages the teeth of the ratchet-wheel. The lever x^9 is connected by a removable and replaceable link x^{11} with an eccentric I^6 on the shaft B. The eccentric I^6 may be adjusted along the shaft B, and is of special construction, described and claimed in a separate concurrent application for Letters-Patent. It may be adjusted to increase or diminish the throw of the link x^{11} and lever x^9, in such a way that the degree of rotation transmitted by the pawl to the ratchet wheel and through the latter to the rollers x^4 x^6, with each revolution of the shaft B, may be regulated with great precision. The degree of rotation of the rollers with each operation is regulated by the distance of throw of the lever x^9; hence, when the lever and ratchet-wheel are on the shaft x^2, as shown, the web Z can only be caused, in each revolution of the shaft B, to travel a distance less than one-half the circumference of the roller x^4. While this would be sufficient for small job work, larger work would make it necessary for the web to travel much farther with each operation than is possible with the adjustment described. For larger work the ratchet wheel and pawl-carrying lever may be removed from the shaft x^2 and placed upon the shaft x, the lever being connected to the eccentric by a shorter link x^{11} than the one shown. When thus adjusted the cog and pinion gearing between the ratchet-wheel and feed-rollers will cause the distance of travel of the web to be increased; and it may be regulated, as before stated, by the adjustment of the eccentric.

K is the web-severing mechanism mounted upon a sliding support K′ for purposes of adjustment toward or away from the other mechanisms. It comprises a stationary cutting blade b mounted upon uprights b' b^2, and a vertically oscillating cutter-blade b^3 pivoted at one end to the blade b and operated from an eccentric on the shaft B, as shown, which may be adjusted longitudinally on the shaft.

L is an adjustable guide for the web Z mounted upon the frame A just in advance of the printing press. It comprises two uprights a a' provided at the top with a vertically disposed plate a^2, having a guide opening a^3 through it for the passage of the web, and a horizontal plate a^4 upon which are adjustable guide pieces a^5 for the edges of the web. The roll Z′ from which the web Z is drawn, may be mounted between standards on the end of the frame, as shown, or in any other suitable location. The web passes from the roll through the guide L, thence through the printing-press, between the web sustaining guides F F and platen, to the feed-mechanism I, where it is clamped between the intermittingly rotating feed-rollers x^4 x^6, and thence to the severing mechanism K.

The machine is capable of adjustment for the purpose of turning out printed sheets of any size within the capacity of the press or presses. The relative speeds of the differ-

ent mechanisms may also be regulated with great accuracy, and when once adjusted there can be no variations in the relative speeds to mar the work turned out. The adjustments are positive and all of the simplest nature, thereby contributing to the desirability of the machine.

In Fig. 1 a second press upon the frame A is indicated by broken dotted lines. When two presses are employed the feed I and web-severing mechanism K would be adjusted farther along toward the rear end of the frame.

The relative adjustments of the presses and cutting device, as for sheets of different sizes, are effected by sliding one or both the presses and the cutting device along the rails. This permits the web to travel in a straight line through the machine, and enables me to dispense with the adjustable guide rollers usually employed in printing presses to regulate the distance of travel of the web between operating mechanisms.

The adjacent lying and horizontally vibrating inking tables and divided inking rollers adapt the press, as stated, to color work. If desired, three or more inking tables, like those described, and made proportionally narrower, may be provided and mounted in the bed-frame to operate as set forth; and inking rollers divided into sections corresponding in number with the inking tables, should also be provided.

The adjustability of the press and feed mechanism with relation to the driving shaft renders it possible to print with several forms in each press, in several colors, and in any size sheets within the capacity of the presses.

While I have shown and described only three pairs of gears between the printing-press shaft and shaft B, the gears may be increased in number, for further change in the ratio of movement, the increase being accompanied with the necessary change of size and number of teeth, so that the press may be caused to give one impression with each four or more rotations of the shaft B. As the feed and cutting mechanisms operate once with each rotation of the shaft B, as many forms as the shaft B rotates times the press-shaft, may be placed side by side in the press, in the direction of the length of the web. The intermittent-feed mechanism may be regulated to carry the web forward a desired distance with each operation; and as many adjacent lying inking tables may be provided for each press as desired, all as before stated. Thus the machine is adapted to turn out many kinds of color-work, which may be increased by increasing the number of presses upon the frame, and, if desired, by having the presses run at different speeds, as provided.

As an illustration of one class of work which my improved machine may perform when, for instance, two presses are provided on the frame: the first press, printing on tint-blocks, may be caused to give one impression with each third revolution of the drive shaft B, and print as many tints as there are inking tables provided; and the second press may be caused to give an impression with each revolution of the drive-shaft, and print three forms in different colors on the tinted surface, the feed being regulated to move the web one-third the distance across a press with each operation. When more than one press is provided upon the frame and arranged, say, to print in different colors on the same fields in the web (as for chromo work), any mistake in the relative adjustment of the forms in the different presses may be overcome by simply adjusting the press longitudinally or crosswise of the machine, as provided by the construction, and thus save a great deal of time, which would otherwise necessarily be taken to unlock and readjust the forms in their chases.

What I claim as new and desire to secure by Letters Patent is—

1. In a printing machine for printing upon a continuous web, the combination with the supporting frame, of a printing press and intermittent web-feeder thereon, and means for regulating the relative speed of operation of the press and web-feeder, whereby the feeder may be caused to advance the web once or oftener, as desired, with each operation of the press, substantially as described.

2. In a printing-machine for printing upon a continuous web, the combination with the supporting frame, of a printing-press, web-feeder and web-cutter thereon, means for adjusting the relative speed of operation between the press and the web-feeder and web-cutter, and means for adjusting the amount of feed, whereby the relative speed of operation of the press and web-cutter, and the distance of travel of the web, with each operation, may be regulated as desired, substantially as described.

3. In a printing machine, for printing upon a continuous web, the combination with the main-frame and driving shaft, of a printing press, web-feeder and web-cutter mounted on the main frame and independently geared to the said shaft, and adjustable speed altering gear between the said shaft and printing press, substantially as and for the purpose set forth.

4. In an oscillating printing press, the combination of the frame C, supports s, r, on the frame, oscillating type-bed, vertically swinging lever E′ pivoted at one end to the support s, resting at its opposite end on the support r, and provided with laterally extending lugs h', platen carried by the lever E′ and a bifurcated lever F pivoted on the support r and provided at its bifurcated end with hooks to embrace the lever E′ and engage the lugs h', substantially as and for the purpose set forth.

5. In an oscillating printing press, the combination with the swinging type bed, of an ink-roller carrier to swing with the bed frame and means for varying, at will, the extent of

sweep of the roller, substantially as and for the purpose set forth.

6. In an oscillating printing press, the combination with the supporting frame, of the vertically swinging type-bed frame having the downward projecting arms D^2, the roller carrying levers H, pivotally supported between their ends on the arms D^2, and adjustable vertically swinging links upon the supporting frame to which the levers H are pivotally connected at their lower ends, substantially as and for the purpose set forth.

7. In an oscillating printing press, the combination with the supporting frame having the downward extending arms C^2, of the vertically swinging type-bed frame having the downward extending arms D^2, roller carrying levers H provided in their ends with longitudinal slots d' and pivoted between their ends to the arms D^2, and longitudinally slotted rods d^2, adjustably and pivotally connected through their slots to the arms C^2, and adjustably and pivotally connected at their opposite ends to the levers H at the slots d', substantially as and for the purpose set forth.

8. The combination with the type-bed of a printing press, of an inking table, comprising a vibrating platform and rotating disk and means for transferring ink from said table to the type-bed, substantially as described.

9. In combination with the vertically swinging type-bed of an oscillating printing press, an inking table, oscillating with the type-bed, comprising a horizontally vibrating platform and rotating disk, and means for transferring ink from said table to the type-bed, substantially as described.

10. In an oscillating printing press, the combination with the supporting frame, of a vertically swinging type-bed, lever G′ pivotally mounted on the type-bed frame and carrying an inking table comprising a platform e^7 and rotating disk e^8, cam-mechanism on the supporting frame in the path of the lever G′ for imparting a horizontal vibrating motion to the said lever, and means for transferring ink from the table to the type-bed, substantially as and for the purpose set forth.

11. In a printing machine for printing upon a continuous web, the combination with the supporting frame, of a web-feeder and web-cutter, on the frame, a printing-press on the frame having a single type-bed, two or more ink-suppliers adjacent to the type-bed for the ink-roller to contact with simultaneously, means for adjusting the relative speed of operation between the press and the web-feeder and web-cutter, and means for adjusting the amount of feed, whereby the relative speed of operation of the press and web-cutter, and the distance of travel of the web with each operation may be regulated as desired, substantially as described.

12. In a printing machine for printing upon a continuous web, the combination with the main-frame and shaft B, of an oscillating printing press adjustably mounted upon the main-frame, adjustable speed altering gear between the shaft B and printing press, and adjusting means, as the slotted sliding plates q on the press, for raising and lowering the press on the main-frame, substantially as and for the purpose set forth.

13. In a printing machine for printing upon a continuous web, the combination with the main frame drive-shaft and printing press, of an adjustable intermittent feed for the web, comprising feed roller carrying shafts x^2 x^5, and a shaft x journaled in a frame on the main-frame, a large gear wheel x' on the shaft x, and a small gear-wheel on the shaft x^2, engaging each other, and a ratchet wheel x^8 and lever x^9 carrying a spring pawl x^{10} to engage the ratchet wheel, interchangeable upon either the shaft x or shaft x^2 and connected eccentrically with the drive shaft, substantially as described.

ALFRED C. NORTH.

In presence of—
J. W. DYRENFORTH,
M. J. FROST.