

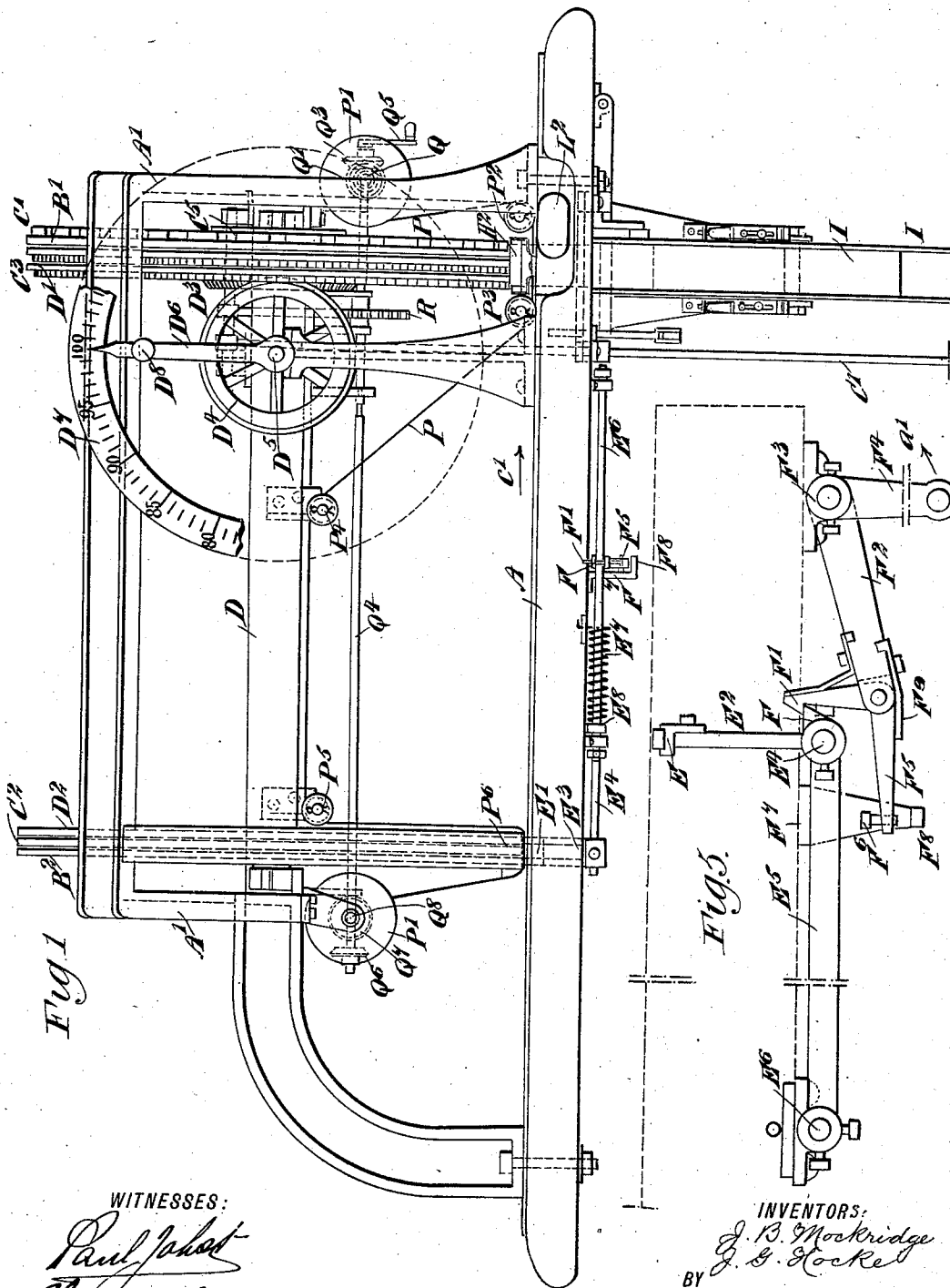
(No Model.)

4 Sheets—Sheet 1.

J. B. MOCKRIDGE & J. G. HOCKE.
PRINTING APPARATUS.

No. 575,968.

Patented Jan. 26, 1897.



WITNESSES:

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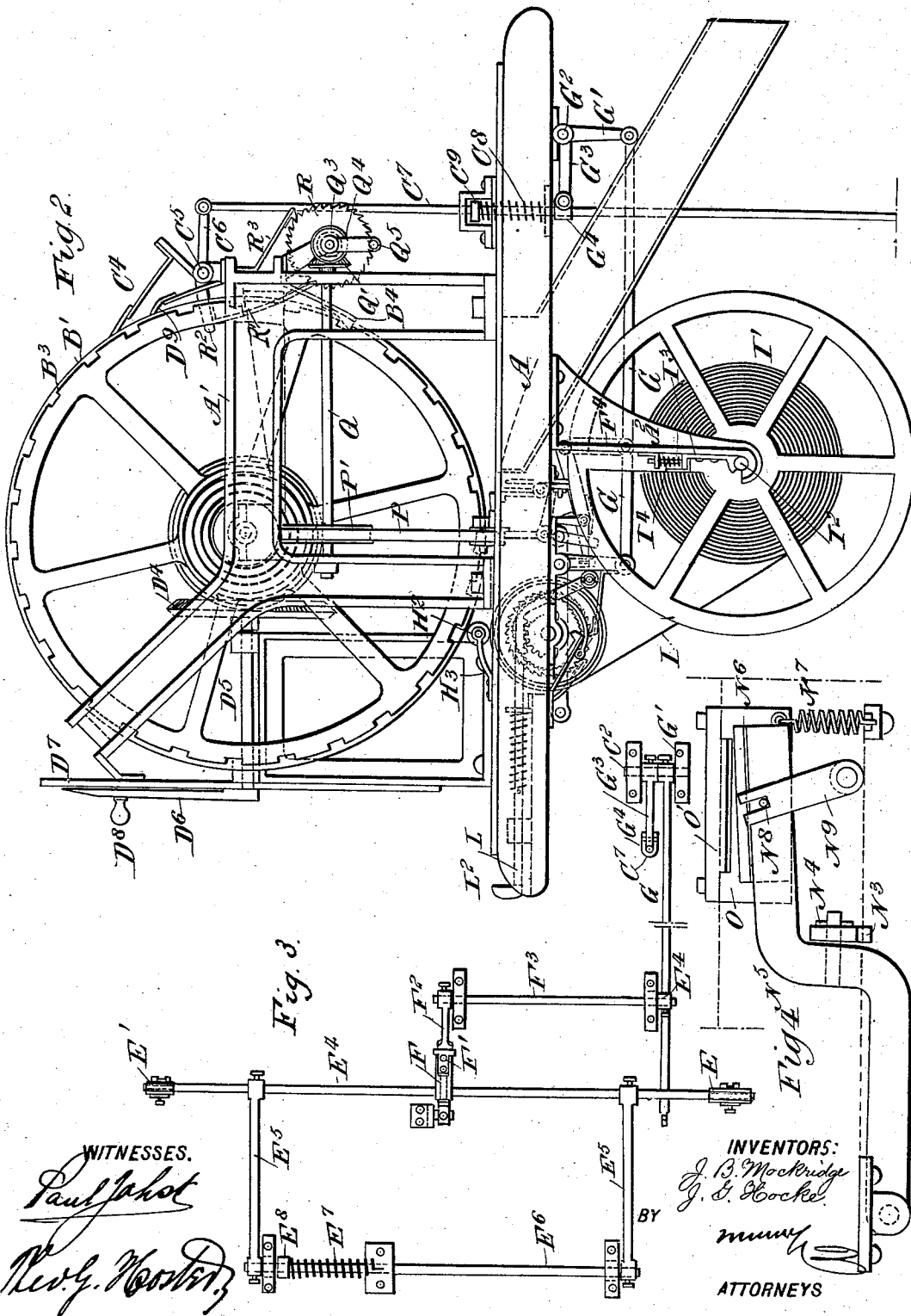
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4 Sheets—Sheet 2.

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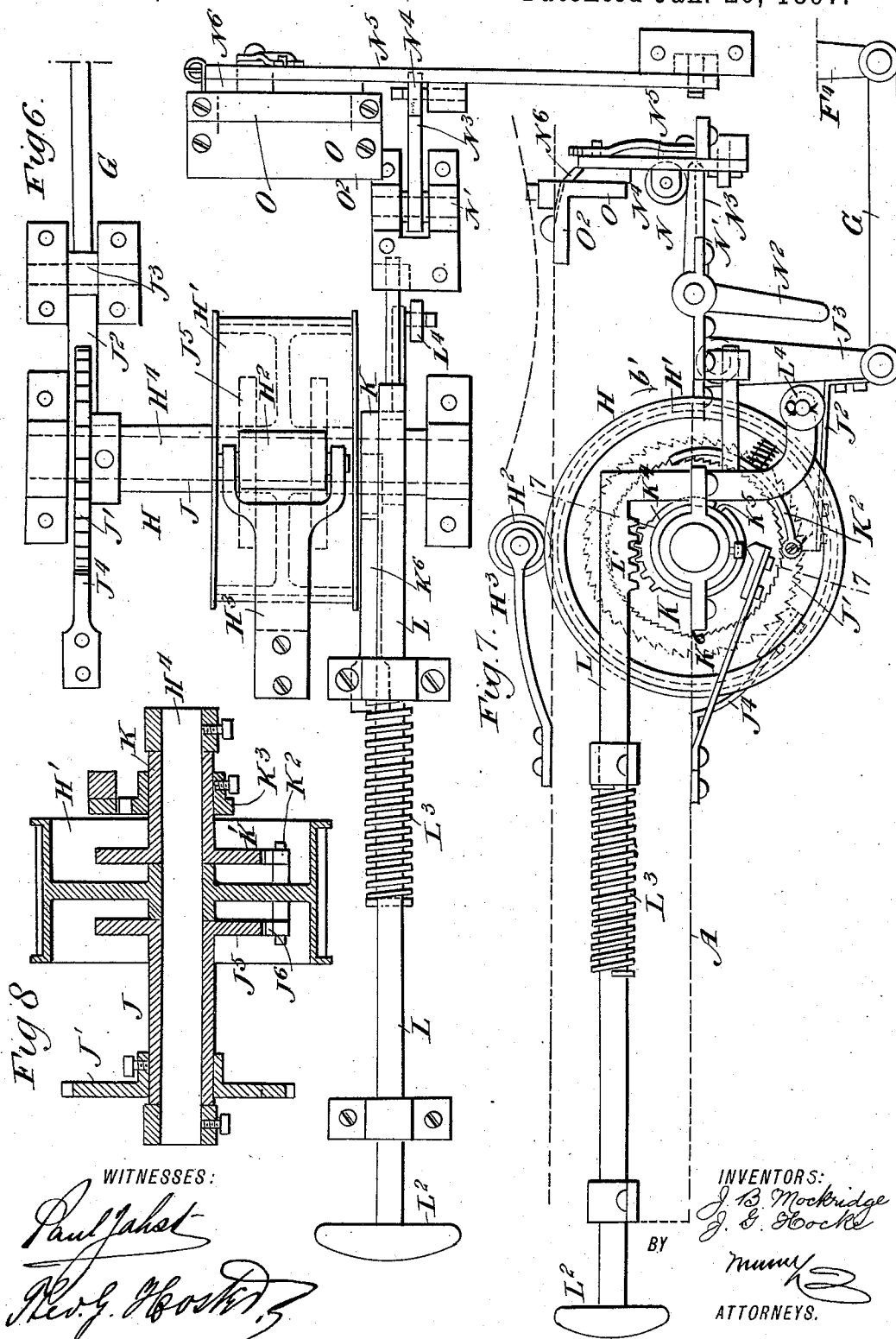
(No Model.)

4 Sheets—Sheet 3.

J. B. MOCKRIDGE & J. G. HOCKE,
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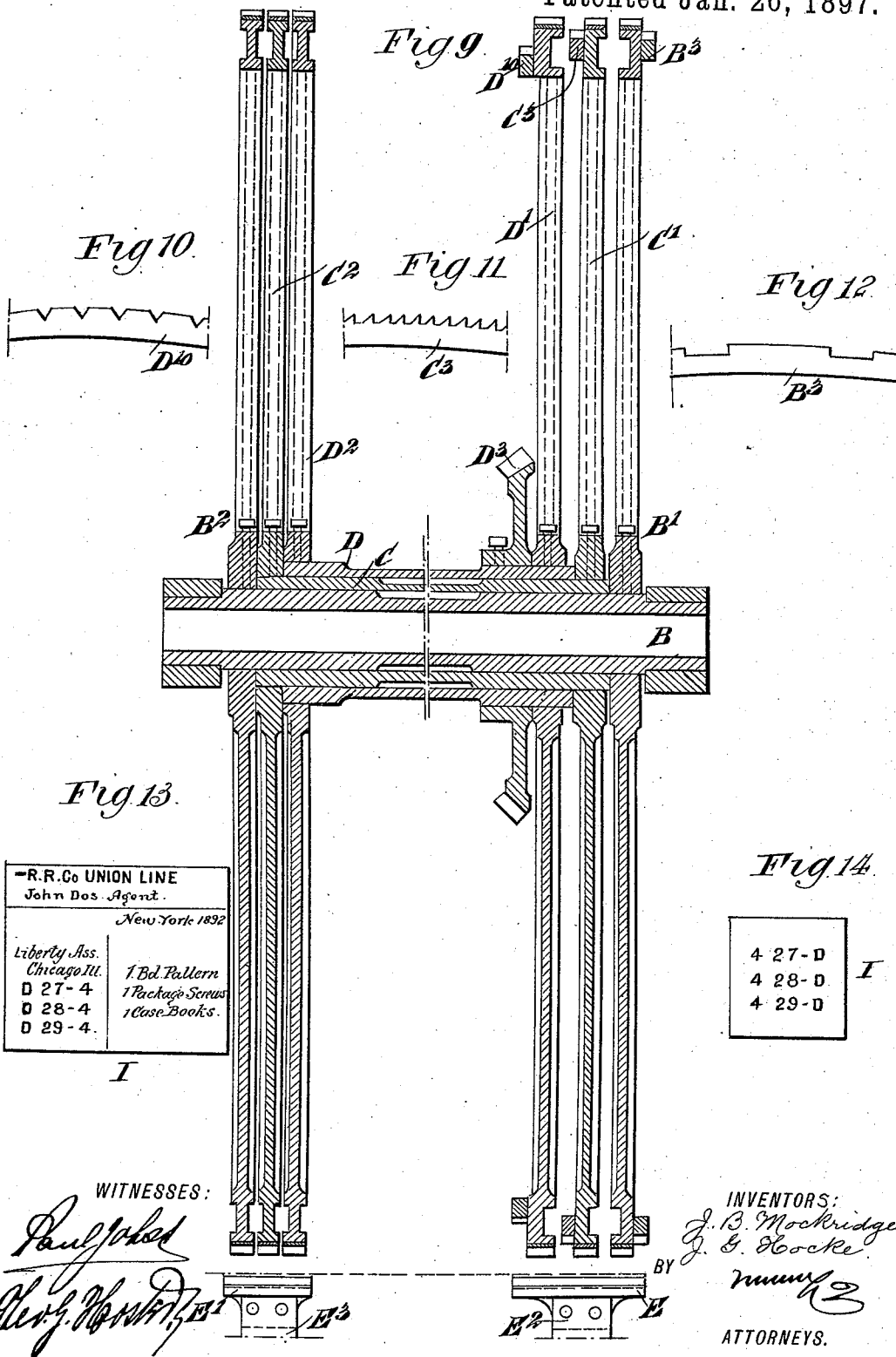
(No Model.)

4 Sheets—Sheet 4.

J. B. MOCKRIDGE & J. G. HOCKE.
PRINTING APPARATUS.

No. 575,968.

Patented Jan. 26, 1897.



UNITED STATES PATENT OFFICE.

JOSEPH BABBITT MOCKRIDGE, OF NEW YORK, N. Y., AND JULIUS G. HOCKE, OF BAYONNE, NEW JERSEY.

PRINTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 575,968, dated January 26, 1897.

Application filed February 1, 1896. Serial No. 577,707. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH BABBITT MOCKRIDGE, of the city, county, and State of New York, and JULIUS G. HOCKE, of Bayonne, in the county of Hudson and State of New Jersey, have invented a new and Improved Printing Apparatus, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved printing apparatus which is simple and durable in construction, very effective in operation, and more especially designed for use in a system of checking freight, to print a set of characters on a shipping-receipt or like document, and at the same time issue a separate check or ticket containing duplicate characters of those printed on the shipping-receipt.

The invention consists principally of two sets of connected type-wheels provided with corresponding type-characters and mounted to rotate in unison.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement. Fig. 2 is an end view of the same. Fig. 3 is a plan view of the movable platens for the printing-wheels. Fig. 4 is an enlarged side elevation of the cutting mechanism for the paper. Fig. 5 is an enlarged end view of the mechanism for operating the platens. Fig. 6 is an enlarged plan view of the paper-cutting mechanism and the mechanism for feeding the paper. Fig. 7 is a side elevation of the same. Fig. 8 is an enlarged transverse section of the paper-feed wheel on the line 7-7 in Fig. 7. Fig. 9 is an enlarged sectional elevation of the sets of type-wheels. Figs. 10, 11, and 12 are face views of part of the ratchet-wheels for the type-wheels, and Figs. 13 and 14 show the characters as printed by the sets of type-wheels.

The improved printing apparatus is provided with a suitably-constructed table A, supporting on its top a frame A', in which is

journaled the longitudinally-extending shaft B, preferably made hollow, as plainly shown in Fig. 9. On the ends of the shaft B, next to its bearings, are secured the type-wheels B' and B², formed on their rims with corresponding type-characters indicating alphabetically-arranged letters of the alphabet.

On the shaft B, between the type-wheels B' and B², is mounted to turn a sleeve C, on the ends of which are fastened the type-wheels C' and C², arranged next to the type-wheels B' and B², respectively, and formed on their periphery with type-characters indicating consecutive numerals from, say "1" to "250." The wheels C' and C² are connected with the wheels B' and B², respectively, in such a manner that on every revolution of one of the wheels C' or C² the other wheels B' and B² are shifted a distance between two type-characters thereon, so that the next letter of the alphabet is brought into position for printing, as hereinafter more fully described, the characters on the wheels B' and B² indicating the series for the consecutive numbers from "1" to "250" on wheels C' and C².

On the sleeve C is mounted to turn a second sleeve D, extending between the wheels C' and C² and carrying on its ends the type-wheels D' and D², arranged next to the type-wheels C' and C², respectively, as plainly illustrated in Figs. 1 and 9. On the peripheries of the type-wheels D' and D² are formed type-characters indicating numerals, say from "1" to "100," arranged consecutively and serving to indicate the temporary number of a railroad-car or other place, as hereinafter more fully described.

It is understood that the wheels B', C', and D' form a set of type-wheels for printing a set of characters corresponding to and forming a duplicate of a like set of characters printed by the set of type-wheels composed of the type-wheels B², C², and D². In order to turn the wheels D' and D², a bevel gear-wheel D³ is secured on the sleeve D and is in mesh with a bevel gear-wheel D⁴, secured on a transversely-extending shaft D⁵, mounted to turn in suitable bearings in the frame A'. On the front of the shaft D⁵ is secured a hand or pointer D⁶, indicating on a dial D⁷, attached

to the frame A' and having a graduation indicating consecutive numerals from "1" to "100," corresponding to the type-numerals on the type-wheels D' and D².

5 On the hand or pointer D⁶ is secured a handle D⁸, which is taken hold of by the operator for moving the said pointer to any desired numeral on the graduation of the dial D⁷, the moving of the pointer causing a revolving of
10 the shaft D⁵, so that the gear-wheels D⁴ and D³ are rotated, and in a like manner the sleeve D, carrying the wheels D' and D², is turned to bring the desired type-characters on the two wheels D' and D² into a lowermost position
15 directly over the top of the table A. For instance, if the pointer or hand D⁶ is moved onto numeral "95" on the dial D⁷ the numeral "95" is at the bottom of both of the wheels D' and D². Thus by the operator shifting the
20 pointer D⁶ any desired numeral can be brought into a lowermost position on the wheels D' and D² to print this numeral onto paper, as hereinafter more fully described, it being, however, expressly understood that
25 the two characters in a lowermost position on the wheels D' and D² are alike. In order to prevent accidental turning of the type-wheels D' and D², a pawl D⁹ is provided, adapted to engage the teeth of a ratchet-wheel D¹⁰, secured on the inner face of the type-wheel D',
30 the ratchet-teeth corresponding in number to the number of type-characters on the wheels D' and D².

In order to rotate the type-wheels C' and C²
35 simultaneously to bring the corresponding type-characters into a lowermost position, the following device is provided: On the inner face of the wheel C' is secured a ratchet-wheel C³, formed with a number of teeth corresponding to the number of type-characters on the
40 said wheel C'. The ratchet-wheel C³ is adapted to be engaged by a spring-pawl C⁴, secured on a longitudinally-extending shaft C⁵, mounted to turn in suitable bearings on the frame A' in the rear of the type-wheels, as will be readily understood by reference to Figs. 1 and
45 2. On this shaft C⁵ is secured an arm C⁶, extending rearwardly and pivotally connected with a downwardly-extending rod C⁷, carrying at its lower end a suitable foot-piece or
50 treadle (not shown) for conveniently manipulating the said rod C⁷, as hereinafter more fully described. A spring C⁸ is coiled on the said rod C⁷ and presses with one end on a projection on the table A and at its other end on a collar C⁹, secured on the rod C⁷. Now when
55 the rod C⁷ is pressed downward by the operator's foot and the spring C⁸ is compressed, the shaft C⁵ is rocked, so that the spring-pawl C⁴ glides back over the teeth of the ratchet-wheel C³ without turning the wheels C' and C². When the operator releases the pressure on the rod C⁷, the spring C⁸ causes the rod to slide upward, thus rocking the shaft C⁵ in an
60 opposite direction, whereby the spring-pawl C⁴ turns the ratchet-wheel C³ and consequently turns the type-wheels C' and C² the

distance between two type-characters. Thus a succeeding numeral is moved into a lowermost position on the wheels C' and C². As
70 previously stated, a full revolution of the wheels C' and C² shifts the series wheels the distance between two of their type-characters, the mechanism for this purpose being similar to the usual mechanisms employed in counting-wheels.
75

In order to hold the series wheels B' and B² in position, a ratchet-wheel B³ is secured or formed on the outer face of the wheel B', and a spring-pawl B⁴ engages the notches in the
80 said ratchet-wheel to hold the wheel B' and its mate B² in position. When the revolution of the wheels C' and C² is about to be completed, a pin, projection, or other device on the said wheel C' lifts the pawl B⁴ out of
85 position on the ratchet or notched wheel B³, so as to permit of shifting the latter the distance between two type-characters.

Opposite the sets of printing-wheels B' C' D' and B² C² D² are arranged the movable
90 platens E and E', respectively, adapted to swing toward and from the lower ends of the said sets of wheels to make the desired impression on the paper sheet, as hereinafter more fully described, it being understood that
95 the platens E and E' are of sufficient length to extend across the faces of these several wheels in each set, as can be readily seen by reference to Figs. 1 and 9.

The platens E and E' are secured on the
100 upper ends of arms E² and E³, respectively, secured on a longitudinally-extending rod E⁴, supported in arms E⁵, attached to the ends of a shaft E⁶, also extending longitudinally and mounted to turn in suitable bearings attached
105 to the under side of the table A. On this shaft E⁶ is coiled a spring E⁷, fastened with one end to a plate on the table A, and the other end of the said spring is secured to a collar E⁸ on the shaft E⁶. The spring E⁷ has
110 the tendency to turn the said shaft E⁶ so as to swing the arms E⁵ upward to move the rod E⁴, the arms E² and E³, and the platens E and E', held on the said rods, in a like direction to make the impression on the sets of type-
115 wheels B' C' D' and B² C² D², respectively.

The rod E⁴ is held normally in a lowermost position, so that the platens E and E' are away from the sets of type-wheels, and for this purpose the rod E⁴ is provided with a lug F, extending rearwardly and adapted to be engaged
120 by a spring-pressed hook F', pivoted on an arm F², extending transversely and secured on a shaft F³, mounted to turn in suitable bearings attached to the under side of the table A. (See Figs. 3 and 5 for details.) The shaft F³ is provided with a downwardly-extending arm F⁴, pivotally connected by a link G with an arm G', secured on a short shaft G²,
125 mounted to turn in suitable bearings on the rear end of the frame A. (See Fig. 2.) The shaft G² carries an arm G³, extending about at right angles to the arm G' and forming with the latter a bell-crank lever. The outer

end of the arm G^3 is pivotally connected with a yoke G^4 , engaging the rod C^7 , previously mentioned, so that when the latter is actuated motion is imparted to the said bell-crank lever, which, by the link G , imparts a swinging motion to the arm F^4 , so as to turn the shaft F^3 , which latter imparts a swinging motion to the arm F^2 , carrying the hook F' . The latter is formed with an arm F^5 , extending at right angles to the hook F' from the fulcrum end of the latter, the outer or free end of the said arm F^5 being provided with a set-screw F^6 , adapted to abut on a lug F^8 , projecting from a bracket F^7 , secured to the under side of the table A . A spring F^9 , attached to the arm F^2 , engages the fulcrum end of the hook F' , and also the arm F^5 , as can be plainly seen in Fig. 5, so as to hold the said arm and hook F' in the proper position and to return the same into this normal position when thrown out, as hereinafter more fully described.

On the downward motion of the rod C^7 the arm G' of the bell-crank lever connected with the said rod C^7 swings rearward and exerts a pull on the link G , which thus pulls the arm F^4 rearwardly in the direction of the arrow a' , as shown in Fig. 5. This rearward motion of the arm F^4 causes a downward swinging of the arm F^2 , so that the hook F' , engaging the lug F , causes a downward swinging of the rod E^4 , carrying the arms E^2 and E^3 , supporting the platens E and E' , respectively. When the arm F^2 swings downward, the arm F^5 , by its set-screw F^6 , engages the lug F^8 , so that the hook F' is turned and disengages the lug F , whereby the rod E^4 is unlocked, and the previously-compressed spring E^7 causes a return movement of the rod E^4 , as above described, so that the platens E and E' move upward and press the paper held on top of the table A under the sets of type-wheels against the same to make the desired impression. When the arm F^4 swings in the inverse direction of the arrow a' on the return or upward movement of the rod C^7 , then the arm F^2 swings upward, carrying the hook F' , with its arm F^5 , in a like direction. The set-screw F^6 finally disengages the lug F^8 , whereby the spring on the hook F' returns the latter to the normal position, and the inclined end of the hook travels up over the inclined back of the lug F to finally snap over the said lug to again engage the latter, as illustrated in Fig. 5. It is understood that the last movement takes place after the impression is made.

The link G is extended forwardly beyond the arm F^4 to operate the paper-feed mechanism H , provided with a flanged wheel H' , over which passes the paper I to be printed on by the set of type-wheels B' , C' , and D' . The top of the wheel H' extends about in line with the top surface of the table A , and the paper is held or pressed onto the rim of the said wheel H' by a roller H^2 , journaled in the spring-arm H^3 , attached to the top of the table A , as plainly seen in Figs. 2 and 7. The

paper I to be printed on by this set of type-wheels B' , C' , and D' is in the shape of a tape arranged in a roll held on a reel I' , the shaft I^2 of which is journaled in a bracket A^2 , attached to the under side of the table A . The reel I' can be conveniently removed from its bearings, as part of the latter is in the shape of a slide I^3 , fitted to slide on the bracket A^2 and pressed on by a spring I^4 to hold it in contact with the top of the shaft I^2 , as will be readily understood by reference to Fig. 2. By lifting the slide I^3 the reel can be lifted out of its bearings and a new roll of paper placed on the said reel in the usual manner. The end of the paper is passed upward and forward over the wheel H' , to be pressed in contact with the rim of the latter by the roller H^2 , previously described. When the wheel H is turned in the direction of the arrow b' , then the paper I is fed transversely and rearwardly between the set of type-wheels B' , C' , D' and their platen E .

In order to impart the necessary motion to the wheel H' , the following device is provided, special reference being had to Figs. 6, 7, and 8: The wheel H' is mounted to rotate loosely on a shaft H^4 , held in suitable bearings attached to the under side of the table A . On the shaft H^4 is mounted to turn loosely a sleeve J , located on one side of the wheel H' and carrying a ratchet-wheel J' , engaged by a spring-pressed pawl J^2 , attached to an arm J^3 , pivoted in suitable bearings on the under side of the table A and connected with the front end of the link G , previously mentioned. On the sleeve J is secured a second ratchet-wheel J^5 , engaged by a spring-pressed pawl J^6 , pivoted on the web of the wheel H' . Now when the link G is actuated, as previously described, and the arm J^3 swings forward then its pawl J^2 turns the ratchet-wheel J' in the direction of the arrow b' , thus imparting a like rotary motion to the sleeve J and the ratchet-wheel J^5 , which by being connected by the pawl J^6 with the wheel H' imparts a rotary motion to the latter in the direction of the arrow b' , thus feeding the paper forward. On the rearward motion of the arm J^3 the pawl J^2 glides over the ratchet-wheel J' , and the latter is then held and locked in place by a dog J^4 , engaging the ratchet-wheel J' . A second feed motion is also given to the wheel H' when the printing on the ticket is completed and the ticket is to be cut off. For this purpose the following device is provided: On the shaft H^4 is mounted to rotate loosely a sleeve K , arranged on the opposite side of the wheel H' , and on this sleeve is secured or formed a ratchet-wheel K' , engaged by a spring-pressed pawl K^2 , fulcrumed on the web of the wheel H' opposite the pawl J^6 , as previously described. On the sleeve K is secured a hub K^3 , formed at its top with a segmental gear-wheel K^4 , adapted to be engaged by a rack L' , formed on the under side of a bar L , fitted to slide transversely in the table A . The front end of the bar L projects a

short distance beyond the front edge of the table A and carries a knob L², adapted to be pressed on by the operator for actuating the device, so as to feed the paper and also to
 5 actuate the cutting mechanism N, hereinafter more fully described. On the bar L is coiled a spring L³, secured at one end to the said bar and resting at its other end on a bearing for the said bar. The spring L³ is com-
 10 pressed when the bar L is pushed transversely, and when the pressure is released on the knob L² the said spring L³ returns the bar L to its normal position. On the hub K³ is also formed a notch K⁵, adapted to be engaged by
 15 a pawl K⁶, so as to hold and lock the said hub, and consequently the sleeve K, temporarily in position to prevent a return movement of the wheel H'. Now it will be seen that when the bar L is pushed inward the rack L' in
 20 mesh with the segmental gear-wheel K⁴ turns the latter and the hub K³, and consequently the sleeve K and the ratchet-wheel K', so that the latter, by its connection with the spring-pressed pawl K², rotates the wheel H' in the
 25 direction of the arrow b'. The paper passing over the wheel H' is thus fed transversely. It is understood that the second feeding of the paper is wholly independent of the first feeding mechanism above described and ac-
 30 tuated when the operator actuates the rod C⁷, connected with the link G, as before described.

The bar L extends rearwardly and carries at its rear end a friction-roller L⁴, adapted to
 35 actuate the paper-cutting mechanism N, the latter being provided for this purpose with a bell-crank lever N', pivoted on the under side of the table A and having its downwardly-extending arm N² in line with the friction-roller
 40 L⁴, so that the forward pushing of the bar L, as above described, brings the said friction-roller in contact with the arm N² to actuate the bell-crank lever N' after the rack L' has
 45 disengaged the last tooth on the segmental gear-wheel K⁴, and the forward feeding of the paper ceases.

The arm N³ of the bell-crank lever N' engages the under side of a friction-roller N⁴, journaled on a lever N⁵, pivoted on the under
 50 side of the table A and carrying at its free end a knife N⁶, operating over the face of a casing O, attached to the top of the table A and formed with a longitudinally-extending slot O' in line with the top surface of the pa-
 55 per-feed wheel H', so that the paper I, fed rearward from the said wheel H', passes onto a table O² of the casing O and through the slot O', to be cut off by the knife N⁶ when the lever N⁵ swings upward. The upward swing-
 60 ing of the lever N⁵ takes place when the lever N' is actuated from the friction-roller L⁴, as above described, and at the time the paper is in a state of rest. A return motion of the lever N⁵, carrying the knife N⁶, is accomplished
 65 by means of a spring N⁷, (see Fig. 5,) connected at one end to a bracket on the table and at its other end to the free end of the le-

ver N⁵. In order to hold the knife N⁶ against the rear face of the casing O, a spring-plate N⁹ is provided, formed at its free end with a
 70 slot engaging the pin N⁸ on the lever N⁵. The spring-plate N⁹ presses the knife N⁶ against the face of the casing O, so as to insure proper cutting of the paper. At the
 75 same time the downward-swinging motion of the lever N⁵ is limited by the pin N⁸ striking against the bottom of the slot in the spring-plate N⁹.

In order to ink the type-characters on the sets of type-wheels B' C' D' and B² C² D², an
 80 ink-ribbon P is provided, connected at one end with a ribbon-reel P', the shaft Q of which is mounted to turn in suitable bearings in the frame A', the said shaft extending trans-
 85 versely, as plainly shown in Figs. 1 and 2. The ribbon passes from the reel P' downward and under a roller P², journaled on the right-hand side of the wheel B', the bottom of the
 90 said roller being in line with the bottom of the set of type-wheels B' C' D'. The ribbon P extends from this roller P² under the type-wheels mentioned to pass under a second
 95 roller P³, journaled on the left-hand side of the type-wheel D'. The rollers P² and P³ have their bearings on top of the table A. The ink-ribbon extends from the roller P³ up-
 100 wardly and to the left to pass over a roller P⁴, journaled on the frame A', and then the ribbon extends horizontally along an arm of the said frame close to the type-wheel D² to pass
 105 over a friction-roller P⁵, from which the ink-ribbon extends downward, and passes over projections on the casing P⁶, inclosing the lower part of the set of type-wheels D² C² B². The ink-ribbon thus extends across the bot-
 110 tom of the last-mentioned type-wheels and then passes upward onto a reel P⁷.

In order to impart the necessary motion to the ink-ribbon P, the following device is pro-
 110 vided: On the shaft Q, carrying the reel P', is secured a bevel gear-wheel Q' in mesh with a bevel gear-wheel Q³, secured on a longitudinally-extending shaft Q⁴, mounted to turn and to slide longitudinally in suitable bear-
 115 ings projecting from the frame A'. On the right-hand end of the shaft Q⁴ is secured a crank arm or handle Q⁵ for conveniently turning the said shaft Q⁴ by hand, for actuating the ink-ribbon in either direction, whenever
 120 it is desired to do so by the operator. On the shaft Q⁴ is secured a bevel gear-wheel Q⁶, located on the right-hand end of the said shaft and adapted to be thrown in mesh with a bevel gear-wheel Q⁷, secured on the trans-
 125 versely-extending shaft Q⁸, carrying the reel P⁷, previously mentioned. By reference to Fig. 1 it will be seen that when the bevel gear-wheel Q³ is in mesh with its bevel gear-wheel Q' then the other bevel gear-wheel Q⁶ on the shaft Q⁴ is out of mesh with its bevel
 130 gear-wheel Q⁷. Now when the shaft Q⁴ is rotated a rotary motion is imparted by the bevel gear-wheel Q³ to the bevel gear-wheel Q', and consequently to the shaft Q, carrying the reel

P', so that the ribbon P is wound up on the said reel, the ribbon traveling then in the direction of the arrow c' . When the shaft Q⁴ is shifted to the right to disconnect the bevel gear-wheel Q³ from the bevel gear-wheel Q⁷ and to throw the bevel gear-wheel Q⁶ in mesh with the bevel gear-wheel Q⁷, then the turning of the shaft Q⁴ imparts a rotary motion to the shaft Q³, carrying the reel P⁷, so as to wind up the ink-ribbon P on the said reel, the ribbon then traveling in the inverse direction of the arrow c' . This motion can be given to the shaft Q⁴ either by hand, by turning the crank-arm, or handle Q⁵ whenever desired. While the machine, however, is in operation the ribbon is fed forward in either direction, as above described, short distances at a time, so as to effectively ink the type-characters on the sets of type-wheels, and for this purpose the following device is provided: On the shaft Q⁴ is secured a ratchet-wheel R, engaged by a pawl R', made of spring metal, and secured to an arm R², attached to the shaft C⁵, previously mentioned, and actuated by the rod C⁷ under the control of the operator's foot. A dog R³, secured to the frame A', engages the ratchet-wheel R and prevents its backward movement. Now when the rod C⁷ is pressed downward the arm R² on the shaft C⁵ swings upward and the spring-pawl R' pulls on the ratchet-wheel R so as to rotate the shaft Q⁴. The rotary motion of the latter is transmitted to either of the reels P¹ or P⁷, as above described, to move the ribbon P either forward, in the direction of the arrow c' , or backward, in the inverse direction of the said arrow.

The operation is as follows: When the several parts of the machine are in the position shown in Figs. 1 and 2 and it is desired to print type-characters on a document, such as a shipping-receipt or a way-bill, at the same time printing a check or ticket having like type-characters on it, then the operator takes hold of the pointer D⁶ and shifts the same to the desired number on the dial D⁷, so as to bring the type-wheels D¹ and D² into the proper position, that is, the type-character corresponding to the numeral on the dial D⁷ into the lowermost position. The operator then places the document to be printed on under the set of type-wheels D² C² B², after which he presses the rod C⁷ downward, so as to actuate the link G to cause the arm F⁴ to swing in the direction of the arrow a' , whereby the platens E and E' are first moved downward and then forced upward by the action of the spring E⁷ after the hook F⁷ has released the lug F. The upward motion of the platens E and E' brings the paper I under the type-wheels B¹ C¹ D¹ and the document under the type-wheels D² C² B² to make the necessary impression of the type-characters on the paper I and the document. As soon as the operator releases the rod C⁷ then the spring C⁸ causes the rod to slide upward, and in doing so the said rod actuates the shaft C⁵, which,

by the pawl C⁴, shifts the type-wheels C¹ and C² to bring the next consecutive numerals to a bottom position. At the same time the ink-ribbon P is shifted by the action of the shaft C⁵, as before explained, and the return motion of the rod C⁶ and the link G causes a feeding of the paper on the wheel H', as before described, it being understood that the arm J³ in moving forward actuates, by its pawl J², the ratchet-wheel J' to turn the wheel H' in the direction of the arrow b' , as fully explained above. Now if it is desired to print a second set of type-characters on the paper, and the document, then the latter is slightly shifted rearwardly, the above-described operation is repeated, that is, the operator presses the rod C⁷ downward to cause the platens E and E' to make a second impression on the paper I and on the document. As the paper I is shifted, as previously explained, the next series of type-characters is in a second row or line on the paper I, and as the document is shifted laterally the second impression is made in the second row on the said document. On the return movement of the rod C⁷ the consecutive-number wheels C¹ and C² are again shifted to bring the next consecutive numeral into a bottom position. Any desired number of sets of type-characters can thus be printed on the document and the paper I, it being, however, understood that the type-characters contain the same serial letter in each row, consecutive numerals next to the series letter, and a numeral corresponding to the number of the car, and as indicated by the pointer D⁶ on the dial D⁷. Thus, for instance, as shown in Fig. 13, the document illustrated therein contains the first impression "D 27--4," the second impression "D 28--4" and the third impression "D 29--4." The paper I (shown in Fig. 14) is printed in a similar manner, only in a reverse order, that is, the first impression is "4--27 D," the second impression is "4--28 D," and the third impression "4--29 D."

Each impression on the document corresponds with a package, box, parcel, or other article of merchandise named on the shipping-receipt or way-bill. Thus, as shown in Fig. 13, three articles are named on the shipping-receipt or way-bill. It is understood that this machine is used in connection with "Means for securing railways and shippers against loss of freight," for which Letters Patent of the United States No. 493,595 were granted to Joseph B. Mockridge on March 14, 1893.

When the document has been printed with the desired number of impressions according to the number of packages indicated on it, then the operator removes the document from under the type-wheels D² C² B² and then presses on the knob L² of the bar L, so as to impart a second feeding to the paper-feed wheel H' in the manner above described. In doing so the paper is fed transversely over the table O² of the casing O and through the slot O' in the same, the distance fed forward

being sufficient to bring the last impression outside of the slot O' to the rear of the knife N⁶. As the farther inward movement of the bar L after the feeding ceases operates the cutting mechanism N in the manner above described, the knife N⁶ swings upward and cuts off the printed part of the paper I, the check or ticket thus formed dropping into a chute S, from which it slides off of the machine at the rear end thereof. It will be seen that by this second feeding forward of the paper I the position of the type-wheels is not in the slightest disturbed, as the said position of the wheels is only changed when the rod C⁷ is actuated as above described. It will be seen that by this arrangement any desired number of impressions can be taken on the document and the paper I, the impressions being consecutively numbered and alike both on the document and the paper, and after the last impression has been made the paper is fed forward by the operator actuating the knob L², as above described, to cut off the printed part to form the check or ticket.

Referring to Fig. 13, the line of letters impressed by one wheel indicates the series of the goods in connection with which the machine is used, the line of double numbers, or the middle line in the figure referred to, indicates the individual numbers of the goods, and the line of single numbers, or the right-hand line of the figure, indicates the car to which the goods are to be relegated, all of which is described in the prior patent hereinbefore referred to.

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

1. In a printing apparatus, the combination with two sets of type-wheels, each comprising a series wheel, a consecutive-numbering wheel, and an indicating-wheel, the corresponding wheels being connected with each other to rotate in unison, of a rod adapted to be actuated by the operator, mechanism for connecting the said rod with one of the said consecutive-numbering wheels to actuate the said consecutive wheels on the upward movement of the said rod, two platens mounted to swing toward and from the said sets of type-wheels and actuated from the said rod on the downward motion of the latter, and intermediate mechanism for connecting the said rod with the said platens to impart motion to the latter, as set forth.

2. In a printing apparatus, the combination with a set of type-wheels comprising a series wheel, a consecutive-numbering wheel, and an indicating-wheel, of a rod under the control of the operator and connected with the said consecutive-numbering wheel to impart motion to the latter, and the said series wheel on the upward movement of the said rod, a paper-feed mechanism adapted to feed the paper under the said set of type-wheels, and intermediate mechanism for actuating the

said paper-feed mechanism from the said rod, substantially as shown and described.

3. In a printing apparatus, the combination with a set of type-wheels, comprising a series wheel, a consecutive-numbering wheel, and an indicating-wheel, of a rod under the control of the operator and connected with the said consecutive-numbering wheel to impart motion to the latter, and the said series wheel on the upward movement of the said rod, a paper-feed mechanism adapted to feed the paper under the said set of type-wheels, intermediate mechanism for actuating the said paper-feed mechanism from the said rod, and a platen actuated from the said rod and adapted to press the paper onto the said set of type-wheels, substantially as shown and described.

4. In a printing apparatus, the combination with a rod under the control of the operator, of a paper-feed mechanism adapted to be actuated from the said rod, and a bar mounted to slide and also connected with the said paper-feed mechanism to actuate the latter independent of the said rod, substantially as shown and described.

5. In a printing apparatus, the combination with a rod under the control of the operator, of a paper-feed mechanism adapted to be actuated from the said rod, a bar mounted to slide and also connected with the said paper-feed mechanism to actuate the latter independent of the said rod, and intermediate mechanism for connecting the said rod with the said paper-feed mechanism, and intermediate mechanism for connecting the said bar with the said feed mechanism, substantially as shown and described.

6. In a printing apparatus, the combination with a platen and a spring-pressed arm carrying the said platen and mounted to swing, of a hook adapted to engage a lug on the said arm, a second arm mounted to swing and on which the said hook is pivoted, and means substantially as described, for imparting a swinging motion to the said second arm, so that the hook causes the first-named arm to swing, substantially as set forth.

7. In a printing apparatus, the combination with a platen and a spring-pressed arm carrying the said platen, and mounted to swing, of a hook adapted to engage a lug on the said arm, a second arm mounted to swing and on which the said hook is pivoted, means, substantially as described, for imparting a swinging motion to the said second arm so that the hook causes the first-named arm to swing, and means for disconnecting the said hook from the said lug on the downward-swinging motion of the said second arm, substantially as shown and described.

8. In a printing apparatus, the combination with a spring-pressed shaft, arms secured to the said shaft and platens supported from the said arms, of a pivotal hook adapted to engage a lug on the said arms, a second arm

mounted to swing and on which the said hook is pivoted, means for imparting a swinging motion to the said second arm, and an extension-arm projecting from the said hook and adapted to engage a fixed lug, substantially as shown and described.

9. In a printing-machine, the combination of three sleeves fitted revolubly within each other, a type-wheel fixed to each end of each sleeve, a dial geared with one sleeve, two pawls respectively connected with the remaining sleeves, and means for operating the pawls, substantially as described.

10. In a printing-machine, the combination of a printing-wheel, a paper-feed mechanism and two independently-operative devices for operating the paper-feed mechanism, one of said devices being capable of direct manual operation and the other set being connected to operate concurrently with the operation of the type-wheel, substantially as described.

11. In a printing-machine the combination of a printing-wheel, a pawl for moving the printing-wheel, a paper-feed mechanism, a manually-operative rod connected with the paper-feed mechanism, a pawl connected with the paper-feed mechanism and capable of operating the same, and a connection between the two pawls, substantially as described.

12. In a printing-machine, the combination of a type-wheel, a paper-feed mechanism, means for advancing the type-wheel, means for operating the paper-feed mechanism, the two means being connected to operate in unison, and a rod connected with the paper-feed mechanism and capable of manual operation to operate said mechanism, substantially as described.

13. In a printing-machine, the combination of a type-wheel, paper-feed mechanism, a knife, means for synchronously operating the knife, the paper-feed mechanism and the type-wheel, and a rod capable of manual operation to operate the paper-feed mechanism independently of the means for synchronously operating the same, substantially as described.

14. The combination with a table having an operated type-wheel thereon, of a pivotally-mounted arm, a platen carried by the arm, a spring tending to force the platen into engagement with the type-wheel, a rockably-mounted arm having a spring-pressed hook thereon, the hook being capable of engaging the first arm to move the platen away from the type-wheel, and a connection between the rockably-mounted arm and the type-wheel, substantially as described.

15. The combination with a table, of an operated type-wheel, a mounted platen capable of movement toward and from the type-wheel, means for pressing the platen toward the type-wheel, and a rockably-mounted arm connected to cooperate with the type-wheel and capable of drawing the platen away from the type-

wheel and against the tendency of the said means, substantially as described.

16. The combination with a table, of an operated type-wheel, a mounted platen capable of movement toward and from the type-wheel and having a tendency toward the same, and means cooperating with the type-wheel, such means being capable of temporarily drawing the platen away from the type-wheel, substantially as described.

17. The combination with a frame, of a mounted type-wheel, means for operating the type-wheel, a mounted platen capable of movement toward and from the type-wheel and having a tendency toward the same, and means in connection with the means for operating the type-wheel, the latter means being capable of drawing the platen away from the type-wheel, substantially as described.

18. The combination with a frame, of an operated type-wheel, a platen capable of movement toward and from the type-wheel and having a tendency toward the type-wheel, a rockably-mounted arm cooperating with the type-wheel, and a spring-pressed hook carried by the arm and capable of drawing the platen away from the type-wheel, substantially as described.

19. The combination with a frame, of an operated type-wheel, a platen capable of movement toward and from the type-wheel and having a tendency toward the same, means for moving the platen away from the type-wheel, paper-feed mechanism, and a connection between the paper-feed mechanism and the platen-moving mechanism, such connection cooperating with the type-wheel and being capable of synchronously operating the platen and the paper-feed mechanism, substantially as described.

20. The combination with a frame, of an operated type-wheel, a platen capable of moving toward and from the type-wheel and having a tendency toward the type-wheel, a rockably-mounted arm capable of moving the platen away from the type-wheel, paper-feed mechanism, and a rod in connection with the paper-feed mechanism and the rockably-mounted arm, the rod cooperating with the type-wheel to synchronously operate the platen and paper-feed mechanism, substantially as described.

21. The combination with a frame, of an operated type-wheel, a platen capable of movement toward and from the type-wheel, paper-feed mechanism, and means for synchronously operating the platen and paper-feed mechanism, such means cooperating with the type-wheel to operate the platen upon the movement of the type-wheel, substantially as described.

22. The combination with a frame, of an operated type-wheel, a shaft rockably mounted on the frame, two arms fixed to the shaft, a platen carried by the arms, a rockably-mount-

- ed arm carried by the frame, a spring-pressed hook pivoted to the rockably-mounted arm and capable of engagement with the platen-carrying parts to move the same away from the type-wheel, a spring pressing the platen toward the type-wheel, and a rod connected to the rockably-mounted arm and cooperating with the type-wheel, substantially as described.
23. The combination with a frame, of an operated type-wheel, a platen capable of movement toward and from the type-wheel and having a tendency toward the type-wheel, a rockably-mounted arm, means for moving the arm, a spring-pressed hook carried by the arm and capable of engagement to move the platen away from the type-wheel, and a projection engaged by the hook and capable of moving the hook to release the platen, substantially as described.
24. The combination with a frame, of an operated type-wheel, a platen movable toward and from the type-wheel and having a tendency toward the type-wheel, an operated arm, a hook carried by the arm and capable of moving the platen away from the type-wheel, and a projection capable of being engaged by the hook and of causing the hook to release the platen, substantially as described.
25. The combination with a frame, of a printing-wheel, a paper-feed mechanism, two independently-operative devices for operating the paper-feed mechanism, one of said devices being capable of direct manual operation and the other being connected to operate concurrently with the type-wheel, and a mounted paper-severing knife capable of operation from the manually-operative devices, substantially as described.
26. The combination with a frame, of an operated printing-wheel, a platen movable toward and from the printing-wheel and having a tendency toward the printing-wheel, paper-feed mechanism, a paper-severing knife, a manually-operative means capable of synchronously operating the paper-feed mechanism and the paper-severing knife, an additional means also capable of operating the paper-feed mechanism and independently of the manually-operative means, means for moving the platen away from the type-wheel, and a connection between said additional means and the means for moving the platen away from the type-wheel and cooperating with the type-wheel, substantially as described.
27. The combination with a frame, of a shaft carried thereby, a wheel loose on the shaft, two sleeves also loose on the shaft, the sleeves being located one on each side of the wheel and having pawl-and-ratchet connection therewith, a manually-operative rack-bar, a gear fixed to one of the sleeves and meshing with the rack-bar, a ratchet-wheel fixed to the second sleeve, a pivotally-mounted arm, a pole carried by the arm and engaging the ratchet-wheel, a printing-wheel, and a connection for the arm, the connection cooperating with the printing-wheel, substantially as described.
28. The combination with a frame, of a shaft carried thereby, a wheel loose on the shaft, two sleeves loose on the shaft and located respectively on each side of the wheel, the sleeves having pawl-and-ratchet connection with the wheel, a printing-wheel, means capable of turning one of the sleeves, such means cooperating with one of the printing-wheels, and a manually-operative means cooperating with the remaining sleeves, substantially as described.
29. The combination with a frame, of a shaft carried thereby, a wheel rotatably mounted on the shaft, two sleeves loose on the shaft, the sleeves being respectively on each side of the wheel and having pawl-and-ratchet connection with the wheel, a manually-operative means capable of turning one of the sleeves, a ratchet-wheel fixed to the remaining sleeve, a pawl engaging the ratchet-wheel and capable of turning the same, means for operating the pawl, and an operated type-wheel with which said means cooperate, substantially as described.
30. The combination with a shaft, a wheel loose on the shaft, two sleeves carried loosely by the shaft and having pawl-and-ratchet connection with the wheel, and means for independently turning the sleeves, substantially as described.
31. The combination of a shaft, a wheel loose on the shaft, two sleeves also loose on the shaft and respectively having pawl-and-ratchet connection with the wheel, a printing-wheel, means for turning one of the sleeves, such means cooperating with the printing-wheel, and a manually-operative means capable of turning the second sleeve, substantially as described.
32. The combination of a shaft, a wheel loose on the shaft, two sleeves loose on the shaft and having independent connection with the wheel, and means for independently turning the sleeves, substantially as described.
33. The combination with a table, of a paper-feed mechanism, a lever fulcrumed on the table, a knife carried by the lever, a bell-crank lever having one arm engaged with the first lever, and means for operating the paper-feed mechanism, such means being also capable of engagement with the bell-crank lever, substantially as described.
34. The combination with a table, of a type-wheel, a platen capable of movement toward and from the type-wheel and having a tendency toward the type-wheel, means for moving the platen away from the type-wheel, a paper-feed wheel, a movable paper-severing knife, an arm pivotally carried by the table, a pawl carried by the arm, means for transmitting movement from the pawl to the type-wheel, a rod connected to the arm having the

5 pawl and to the means for moving the platen away from the type-wheel, the rod cooperating with the type-wheel, a sliding bar capable of turning the type-wheel, means for transmitting movement from the bar to the type-wheel by which the type-wheel may be operated independently of the pawl, and a lever capable of being engaged by the sliding bar

and of operating the paper-severing knife, substantially as described.

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Witnesses:

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