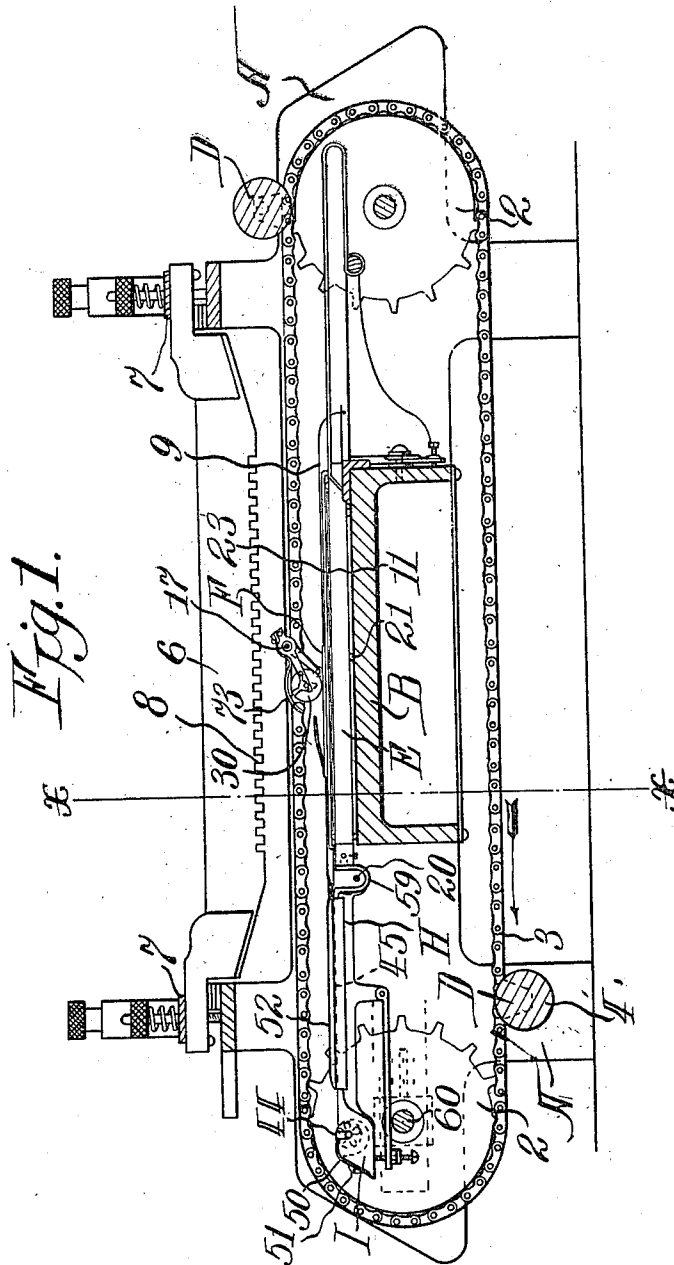


E. DUSCHER.
 PRINTING MACHINE.
 APPLICATION FILED MAR. 13, 1912.

1,043,911.

Patented Nov. 12, 1912.
 4 SHEETS—SHEET 1.



Witnesses.
 M. S. Fischer
 H. L. Fischer

Inventor:
 Ernest Duscher,
 by: F. V. Bradbury
 Attorney.

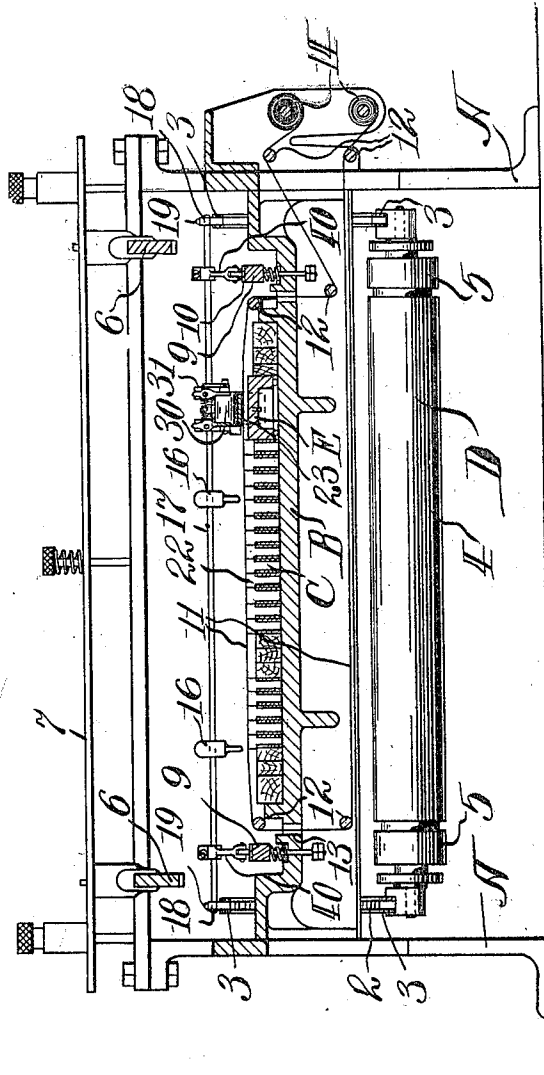
E. DUSCHER.
 PRINTING MACHINE.
 APPLICATION FILED MAR. 13, 1912.

1,043,911.

Patented Nov. 12, 1912.

4 SHEETS-SHEET 2.

Fig. 2.



Witnesses:
 W. S. Frasier
 H. S. Fischer

Inventor:
 Ernest Duscher,
 by: F. A. Bradley
 Attorney.

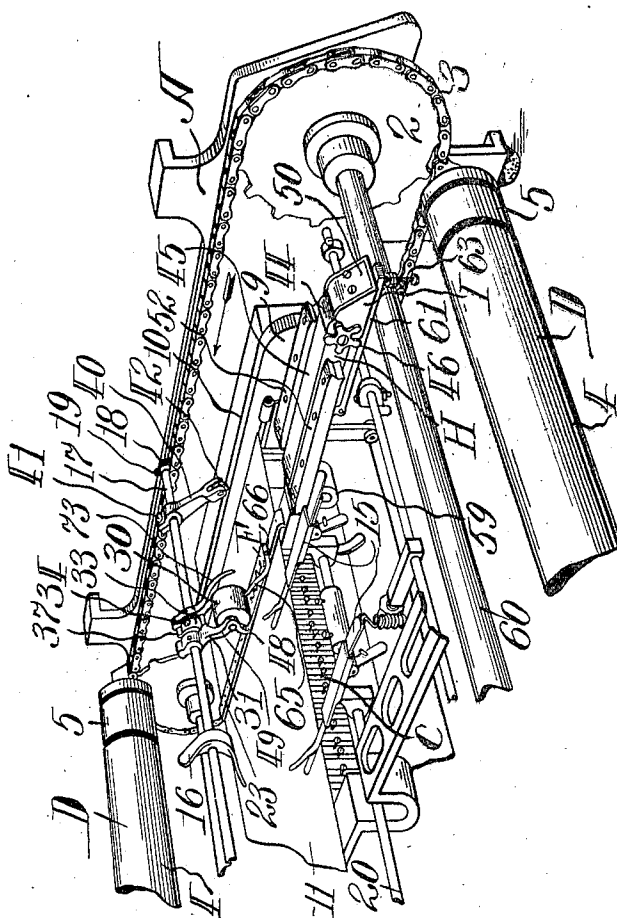
E. DUSCHER.
PRINTING MACHINE.
APPLICATION FILED MAR. 13, 1912.

1,043,911.

Patented Nov. 12, 1912.

4 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
W. S. Fischer
H. Fischer

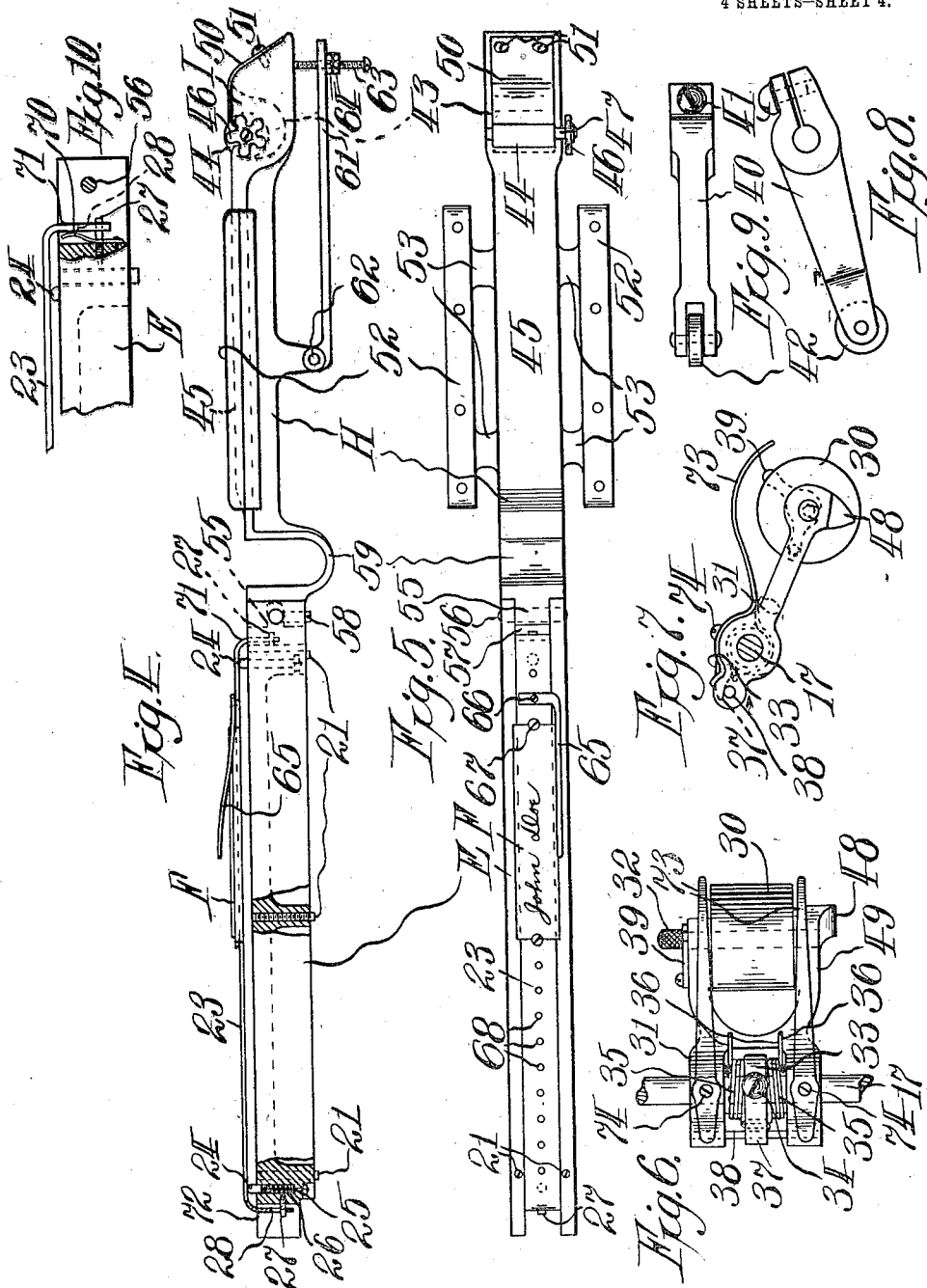
Inventor:
Ernest Duscher,
by: F. W. Brothman
Attorney.

E. DUSCHER.
 PRINTING MACHINE.
 APPLICATION FILED MAR. 13, 1912.

1,043,911.

Patented Nov. 12, 1912.

4 SHEETS-SHEET 4.



Witnesses:
 M. A. Fischer
 H. Fischer

Inventor:
 Ernest Duscher,
 by: F. A. Bradbury,
 Attorney.

UNITED STATES PATENT OFFICE.

ERNEST DUSCHER, OF LA CROSSE, WISCONSIN, ASSIGNOR TO THE VOTE BERGER COMPANY, A CORPORATION OF WISCONSIN.

PRINTING-MACHINE.

1,043,911.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed March 13, 1912. Serial No. 683,600.

To all whom it may concern:

Be it known that I, ERNEST DUSCHER, a citizen of the United States, residing at La Crosse, in the county of La Crosse and State of Wisconsin, have invented a new and useful Improvement in Printing-Machines, of which the following is a specification.

My invention relates to improvements in printing machines and has to do more particularly with a direct inking signature attachment to a printing machine in which an inking ribbon is employed co-acting with the main portion of a type form.

While shown specifically applied to the general structure of printing machine, set forth in my application No. 660,425 filed Nov. 15, 1911, it will be understood that the invention involved may by slight modification be adapted to other forms of ribbon printing machines.

The primary object of this invention is the production of a printing machine which will print from a ribbon and by direct inking simultaneously, thus in printing a type written letter on a ribbon press a signature may be also printed in ink directly.

Further objects of my invention and advantages attained thereby will be apparent from the following description.

In the accompanying drawings forming part of this specification, Figure 1 is a longitudinal section of a ribbon printing machine showing my invention applied thereto; Fig. 2 is a transverse section taken upon the line X—X, Fig. 1; Fig. 3 is a detail in perspective; Fig. 4 is a side elevation of my printing attachment removed from the printing machine, portions thereof being shown in section; Fig. 5 is a plan of the construction illustrated in Fig. 4; Fig. 6 is a plan of the inking roller and its supporting means; Fig. 7 is a side elevation of the construction illustrated in Fig. 6; Fig. 8 is a side elevation of one of the guides which keeps the inking roller at an even height as it passes over the gage of the printing attachment; Fig. 9 is a plan of the construction illustrated in Fig. 8 and Fig. 10 is a section of a detail of the block and gage.

For the purpose of clearly defining my in-

vention a brief description of the printing machine to which my invention is applied will be made followed by a detail description of the signature attachment.

In the above drawings I have shown a printing machine having a supporting frame A, a type bed B carried by said frame on which a type form C may be supported (see Fig. 2) and with which a traveling platen D coöperates in making a printing impression.

On the frame A are mounted sprocket wheels 2 carrying sprocket chains 3 at each side of the machine on which chains is mounted the platen D in the form of a roller having a body 4 which traverses the type form and a wear wheel 5 at each end through which printing pressure is imparted to the platen. The type bed B is so positioned with relation to the path of platen D carried by the sprocket chains 3 that the platen normally travels orbitally about the type bed, and above the surface of the type in the form and out of contact with it.

Printing pressure on the platen is secured by means of pressure bars 6 at each side of the machine under pressure from the spring 7 which may be adjusted to different degrees of pressure. The under surface of the pressure bar 6 is formed with rectangular notches 8 which bear upon the periphery of the integral disk portion of wear wheel 5 (see Fig. 2) producing an intermittent pressure and repeated impacts on the platen and thereby on the form. A tabulating rail 9 is shown at each side of the machine on which rail the body portion of wear wheel 5 travels. The upper surface of the tabulating rail is formed with a steel ribbon 10 mounted resiliently on it by means of which ribbon local adjustments of pressure on the form may be secured.

A color inking ribbon 11 is mounted on the machine between the path of the platen and the type form and is carried over suitable anti-friction rollers 12 through openings 13 in the type bed and has its ends connected to feed and take up rollers 14 which serve to automatically step the ribbon over the type in the usual manner. The specific construction employed for stepping the rib-

bon is not illustrated in the drawings but can be found fully set forth in application Serial No. 638,388 filed on July 13, 1911 jointly by William A. Sorg and myself and also in the application filed by William A. Sorg on Jan. 8, 1908 Serial No. 437,302.

Paper lifters 15 which serve to assist in positioning the paper to be printed upon the type form and cause it to properly register with the type also serve to lift the rearward edge of the sheet of paper after each printing operation. The paper strippers such as 16 follow and catch the raised edge of the paper then removing the paper after it is printed from the machine. The strippers are mounted upon the shaft 17 which extends between and is supported by the chain belts 3 across the machine following after the impression roller. The shaft 17 is rigidly secured to the chain belts in a lug 18 on one of the links by means of a set screw 19. The paper lifters 15 are adjustably supported upon the transverse shaft 20.

My signature attachment consists of a block E of comparatively narrow width and extending transversely across the type bed and parallel with the line of motion of the platen D, said block being adapted to be held in the type bed by the type form in which it is locked. The block rests directly on the type bed B on which it is adjustable vertically by means of set screws 21, this adjustment being permanent when once made to bring its surface to such an elevation that standard type 22 in the main type form will have equal elevation with the type plate F which the block E is adapted to carry. The printing plate F which is commonly used for signatures may be in the form of an etching or otherwise constructed and secured on the plate 23. It may when desired be made of type locked in a form and the term printing plate is to be considered in the claims following this specification as covering such construction. The plate 23 is depressible that is it recedes under pressure exerted down upon its surface by the platen while the ribbon 11 is interposed between the gage 23 and the block. The gage is in the form of a long narrow plate which is supported horizontally upon resiliently supported pins 24 which are pressed upwardly by means of springs 25 stationed in openings 26 in the block. The upward movement of the gage 23 is permitted by means of pins 27 extending from the ends of the block E and passing freely through slots 28 in the downturned ends of the plate and is limited by the ends of the slots 28 impinging against said pins. In this manner when the platen is not in contact with the printing plate F or the gage 23 a space between the plate 23 and the block E permits the ribbon 11 passing freely

through said space and feeding forward by the ribbon feeding mechanism.

Mounted upon the shaft 17 is an inking roller 30 which is journaled in the yoke 31 on the removable pin 32 said yoke being journaled on the shaft 17 and supported so as to incline rearwardly causing the inking roller to trail after the shaft. The inking roller is pressed in a downward direction by means of a dog 33 rigidly secured to the shaft 17 by the set screw 34 and having secured thereto a coil spring 35 the ends 36 of which bear down upon the yoke. The downward movement of the inking roller is limited by the end 37 of the dog impinging against the cross piece or stop 38 on the yoke. The dog 33 is set in adjusted position on the shaft 17 by the screw 34 so that the inking roller 30 will have free movement over the printing plate F during the normal operation of the machine and at the same time limit movement of the inking roller when traveling out of contact with the inking block and plate F. The pin 32 is held in the yoke by means of a catch 39.

Secured to the shaft 17 at each end in position to travel over the rail 9 is a guide arm 40 said arm being fastened in adjusted position on the shaft 17 by means of a set screw 41, the free end of said arm having an anti-friction roller 42 bearing down upon the surface of the tabulating rail 10 and serving by its adjustment to keep the inking roller at an even height as it passes over the gage 23. This adjustment can be varied so that the inking roller will evenly ink the printing plate and will not come into contact with the gage 23 thus preventing smutting of the material which is being printed upon through contact of the inking roller with said gage.

Secured to the forward end of the block E is an auxiliary block H which carries an inking fountain I. The auxiliary block H has in its outer extremity a cavity 43 in which is journaled a fountain roller 44 with the surface of which the inking roller 30 is adapted to contact each printing operation of the machine and to carry the ink transmitted by the roller 44 from the fountain to the ink distributing surface 45 which is formed on the auxiliary block H. In this manner ink is evenly distributed over the surface of the printing roller 30 before it is applied to the surface of the printing plate F. Fountain roller 44 is freely journaled the sides of the fountain and is revolved forward a step each time the inking roller 30 coöperates with it by means of the sprocket wheel 46 carried by the shaft 47 of the fountain wheel and a tooth 48 extending down from the side of arm 49 of the yoke 31 in which the inking roller 30 is journaled and adapted to mesh with the teeth of the

sprocket. A flat spring 50 secured to the frame of the fountain I by means of screws 51 presses evenly upon the periphery of the roller 44 and serves to adjust the quantity 5 and evenly distribute the ink upon the periphery of the fountain roller 44. Longitudinally disposed adjacent to each side of the distributing surface 45 is a raised guide rail 52 made of fiber or other suitable material 10 suitably secured to the arms 53 and adapted to form a track upon which the body of the impression roller D rolls when passing over the ink distributing surface 45. These guide rails 52 being raised above the surface 45 15 prevent the platen roller from coming into contact with the ink. The auxiliary block H is secured to the main block E by means of a tongue and groove joint, the tongue 55 of the member H being slotted horizontally 20 and passing over the pin 56 across the groove 57. A set screw 58 passing up from below through the tongue below the slot impinges against the pin 56 for the purpose of assisting in holding the parts together. This 25 joint permits the outer end of the auxiliary block H to be adjusted in height and also permits the blocks E and H being separated when desired. The auxiliary block H is formed with a loop 59 passing freely below 30 the paper lifter shaft 20 and the outer end of the auxiliary block H is adjustably supported upon the shaft 60 which carries a pair of sprockets 2 by means of a tilting arm 61 which rests upon said shaft. This 35 arm is pivoted to the auxiliary block at 62 and its outer end carries an upwardly extending bolt 63 locked in adjusted position in the arm 61 by means of lock nuts 64 with its end impinging against and supporting the auxiliary block. Thus by adjusting 40 the bolt 63 in the arm 61 the height of the fountain end of the auxiliary block may be adjusted so that the inking roller will touch the fountain roller 44 lightly and thus assist in feeding the proper quantity of ink 45 onto and regulating the distributing of ink on the distributing surface 45.

In operation a sheet of material to be printed is placed upon the ribbon over the 50 type form and over the printing plate F it being properly adjusted against the paper lifters 15 to register with the type. Revolution of the chain belts in the direction of the arrow indicated in Fig. 3 causes the impression roller to cooperate with the type in the form and produce a printing impression 55 including the printing of the signature by direct inking. The paper strippers 16 following the platen engage and remove the paper off of the form, the paper lifters having previously lifted the rearward edge of the paper into engaging position for the 60 strippers. The inking roller passing over the fountain carries ink onto the distribut-

ing surface 45 and while traveling over the 65 distributing surface receives an even coating of ink which in turn is transmitted to the printing plate F which is inked in readiness to deliver another printing impression during the subsequent impression of the platen. 70 While the platen is cooperating with the type in the main form and with the printing plate F to produce printing from both simultaneously, the ribbon remains stationary and the gage 23 carrying the printing plate 75 F is pressed down by contact with the platen roller until the printing surface of the plate F lies in the same plane as that of the printing surface of the main form of type. As soon as the impression element passes out 80 of cooperation with the gage 23 said gage and plate resume normal position as illustrated in Fig. 4, leaving a space between the gage and surface of the block E through 85 which the ribbon is free to be fed forward before a subsequent printing operation of the machine.

To hold the paper or material being printed upon out of contact with the printing plate F while the parts are not actually 90 making an impression and for the purpose of preventing smudging, a paper lifter 65 in the form of a spring arm projecting upwardly above the surface of the plate F is secured by means of a screw 66 to the sur- 95 face of the gage adjoining said plate. This lifter 65 supports the paper normally above the plate F but is depressed by force exerted against the paper as the impression element passes into cooperation with the 100 forms.

The printing plate F is secured to the gage 23 by means of screws 67 threaded thereinto, said gage being provided with a series of screw holes 68 so spaced apart and 105 disposed longitudinally in a row as to receive the screws 65 and 67 and position the printing plate F and lifter 66 as desired in the type form on the type bed thus causing printing of the signature in the desired 110 position below the closing compliments of a letter.

When inserting block E in the form the auxiliary block H is detached and the gage 23 removed from the block E so that the 115 ribbon may be passed over the block E. To remove the gage it is pushed longitudinally against the tension of the spring 70 which presses against the downwardly bent end 71 of the gage through which one of 120 the pins 27 projects. The movement releases the opposite downwardly bent end 72 of the gage 23 from engagement with the opposite pin 27. After the ribbon has been adjusted over the block E and the main type 125 form the gage 23 is re-adjusted to the block by reversing the operation just described. The auxiliary block H is then re-attached

to the end of block E. These adjustments are easily and quickly made without the inconvenience of disconnecting one end of the ribbon from the ribbon rollers.

- 5 The inking roller 30 carries one or more guards 73 secured to the yoke frame 31 such as by screws 74 and serving to prevent clothing of the operator or paper from coming into contact with the inking roller
10 and soiling as the roller travels orbitally about the bed of the machine.

While the chain belt has been described as being equipped with one platen roller and an inking attachment which is adapted to co-
15 operate with the printing plate it will be understood that one or more impression rollers and accompanying inking attachments may be mounted upon the belt to increase the relative speed of printing.

- 20 In accordance with the patent statutes I have described the principles of operation of my invention together with the apparatus which I now consider to represent the best embodiment thereof but I desire to have it understood that the construction shown is
25 only illustrative and that the invention can be carried out by other means and applied to uses other than those above set forth within the scope of the following claims.

- 30 Having described my invention, what I claim as new and desire to protect by Letters Patent is:—

1. In a printing machine, a main type form, an inking ribbon passing over type
35 in said form, a supplementary type form adjacent said main form and normally spaced above the plane of the printing surface of the type in said main form to allow the free passage of the ribbon between said
40 forms, said supplementary type form being depressibly mounted to permit the surface of its face lying in the plane of the type in the main form, means for inking the type in said supplementary form and a
45 platen adapted to produce a printing impression from said forms during a stroke.

2. In a printing machine, a type form, a platen roller adapted to cooperate with the type in said form, a carrier for said platen
50 roller, an inking ribbon adapted to cooperate with the type in said form, a printing plate depressibly mounted in said form and lying normally in superior position above the ribbon and means on said carrier
55 for inking the printing surface of said plate; whereby said ribbon is freely disposed below said plate when the latter is in superior position and a printing impression is adapted to be produced from said plate
60 and the type in said form during a single stroke of said roller.

3. In a printing machine, a main type form, an inking ribbon passing over the type in said form and adapted to cooperate

therewith, a supplementary type form de- 65
pressibly mounted above said ribbon and adapted to recede with its type lying in substantially the same plane as that of the type in said main form, a platen roller, a carrier for said roller operable to cause said roller
70 to produce a printing impression from said forms during a single stroke, an inking fountain, and an inking device on said carrier adapted to cooperate with said fountain and movable into contact with the
75 printing surface of said supplementary form.

4. In a printing machine, a main type form, an inking ribbon passing over the type in said form and adapted to cooperate
80 therewith, a gage depressibly mounted above said ribbon, a supplementary type form removably secured to said gage, a platen, a carrier for said platen adapted to cause said platen to produce a printing impression
85 from said forms during a single stroke and means on said carrier for inking type in said supplementary form, said ribbon being freely movable below said gage and said
90 gage adapted to be depressed by said platen with the type in said supplementary and main type forms lying in substantially the same plane.

5. In a printing machine, a main type form, an inking ribbon passing over the type in said form, a gage depressibly and
95 freely mounted in said type form above said ribbon, a supplementary type form selectively positioned on said gage, means for inking the type in said supplementary form and a platen adapted to cooperate with said
100 forms to produce a printing impression during a single stroke.

6. In a printing machine of the class set forth, a type form, an inking ribbon coop- 105
erating therewith, a supplementary type form in connection with said main form, normally spaced above the plane of the printing surface of the type in said main form to allow the passage of the ribbon be-
110 low the same and depressible to permit the surface of its type lying in said plane, means for resiliently supporting said supplementary type form and a platen operable to depress said supplemental form and to
115 produce a printing impression from said forms simultaneously.

7. In a printing machine of the class set forth, a type form, an inking ribbon coop- 120
erating therewith, a supplementary type form in connection with said main form, means for directly inking said supplemental form, means for supporting said
125 supplemental form spaced above the surface of the type in said main form to permit the passage of said ribbon freely below said supplemental form and a platen operable to depress said supplemental form with the

printing surface thereof lying in the same plane as the printing surface of said main form and to produce a printing impression from said forms simultaneously.

- 5 8. In a printing machine, a main type form, an inking ribbon passing over type in said form, a depressible supplementary type form above said ribbon, a platen adapted to produce a printing impression from said forms during a single stroke and a paper lifter adjacent said supplementary form adapted to lift the printing material above the surface of the type in said supplementary form.
- 10 9. In a printing machine of the class set forth, a type form, an inking ribbon passing over the type in said form, a supplementary type form in connection with said main form, a paper lifter adjacent to said supplemental form and adapted to resiliently support the paper being printed upon out of contact with said supplemental form and a platen operable to produce a printing impression from said forms simultaneously.
- 15 10. In a printing machine of the class set forth, a type form, an inking ribbon cooperating therewith, a block in said form below said ribbon, a supplementary type form depressibly supported by said block above said ribbon, said supplementary form being detachably secured to said block, means for directly inking said supplementary form and a platen operable to produce a printing impression from said forms simultaneously.
- 20 11. In a printing machine of the class set forth, a type form, an inking ribbon cooperating therewith, a block held in said form, a gage detachably secured to said block and depressibly supported above said ribbon permitting said ribbon to pass freely between said gage and said block, a supplementary type form secured to said gage, means for directly inking said supplementary form, means for holding said inking means out of contact with said gage and a platen operable to produce a printing impression from said forms simultaneously.
- 25 12. In a printing machine, a main type form, an inking ribbon passing over type in said form, and adapted to cooperate therewith, a supplementary type form depressibly mounted above said ribbon and adapted to recede with its type lying in substantially the same plane as that of the type in said main form, a platen, a carrier for said platen adapted to cause said platen to depress said supplementary form and produce a printing impression from said forms, means on said carrier following said platen for removing printed material from said forms, an ink fountain and an inking roller on said carrier adapted to cooperate with said fountain and movable to ink the printing surface of said supplementary form.

13. In a printing machine of the class set forth, a type form, a type block in said form, an inking ribbon passing over type in said form, a gage depressibly supported above said ribbon and detachably secured to said block to permit said ribbon traveling freely over the type in said form, a supplementary type form secured to said gage, an inking roller adapted to directly ink said supplemental form, an inking fountain cooperating with said inking roller to supply ink thereto, an ink distributor also cooperating with said roller, a platen operable to produce a printing impression from said forms simultaneously, guides cooperating with said platen to prevent contact with said distributor, a carrier upon which said platen is mounted, a shaft upon said carrier supporting said inking roller, a paper stripper carried by said shaft and adapted to engage and remove the printed material from said forms and a guide carried by said shaft serving to prevent contact between said gage and roller when the latter travels out of contact with said supplementary form.

14. In a printing machine, a bed, a main type form on said bed, an inking ribbon passing over the type in said form, a type plate block adjustable in height on said bed in said form, a depressible supplementary type form on said block resting freely in superior position above said ribbon and adapted to recede with the surface of its type lying in substantially the same plane as the surface of the type in said main form, means for inking the printing surface of said supplementary form and a platen adapted to depress said supplementary form and produce a printing impression from said forms simultaneously.

15. In a printing machine, a type plate block, an auxiliary block pivotally secured in an extension of said block and adapted to swing up and down, a type plate selectively disposed upon said type plate block, an inking fountain on the free end of said auxiliary block, an ink distributor adjacent said fountain, an inking roller adapted to co-act with said fountain, distributor and type plate to ink said plate, and means for adjustably supporting the free end of said auxiliary block to vary the pressure and contact of said inking fountain and distributor with said inking roller.

16. In a printing machine, a main type form, an inking ribbon passing over type in said form, a supplementary type form adjacent said main form normally spaced above the plane of the printing surface of the type in said main form to allow free passage of the ribbon between said forms and said supplementary type form being depressibly mounted to permit the surface of

its type lying in the plane of the printing
surface of the type in the main form, a
platen adapted to depress said supplement-
ary form and to produce a printing im-
5 pression from said forms during a single
stroke, an ink fountain, an ink distributor
adjacent said fountain, an inking roller
adapted to coöperate with said fountain and
distributor and to ink the type in said sup-
10 plementary form and means for regulating

the contact pressure between said roller and
ink distributor.

In testimony whereof, I have signed my
name to this specification, in the presence of
two subscribing witnesses.

ERNEST DUSCHER.

Witnesses:

G. O. LUNDGREN,
J. H. BATES.