

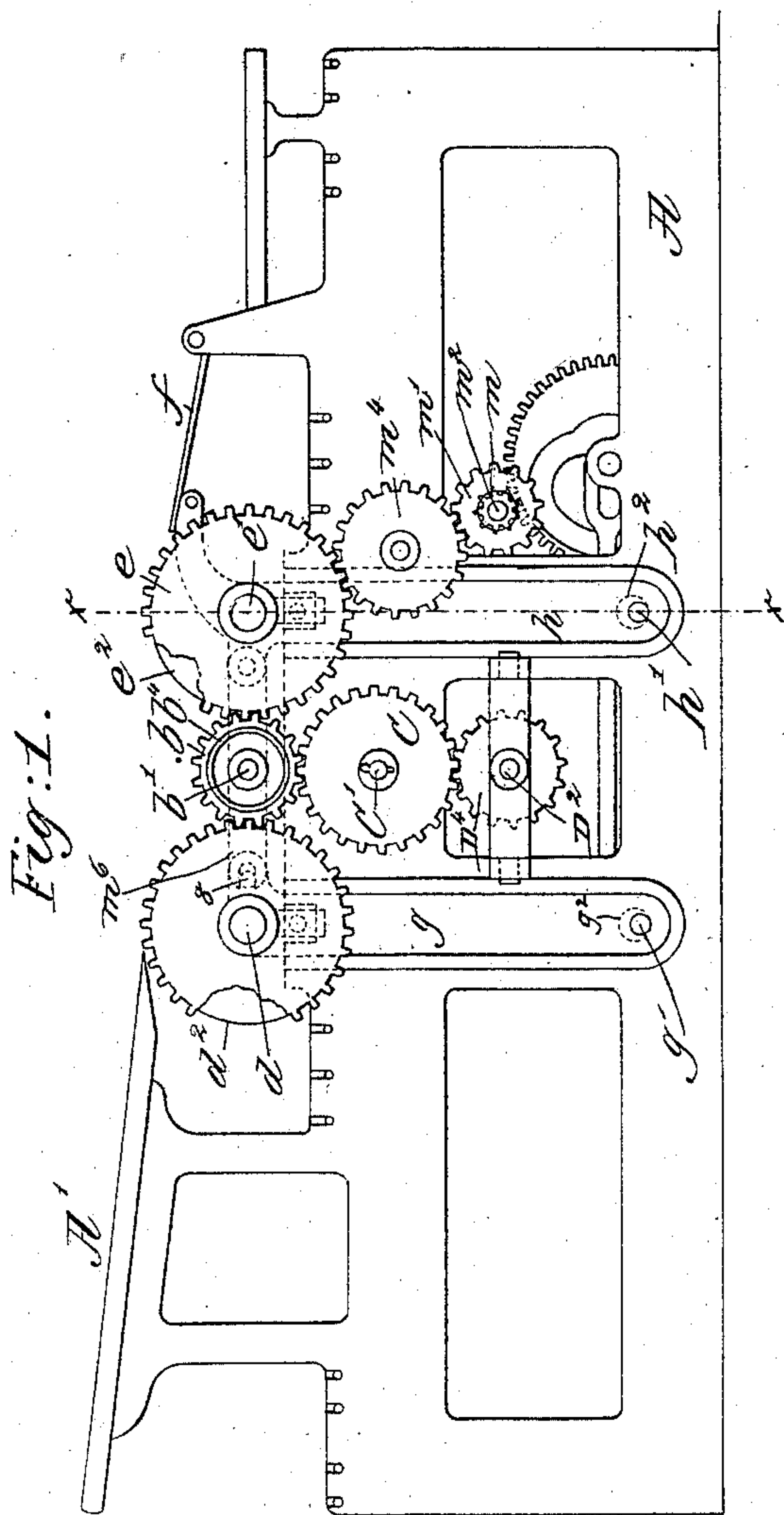
(No Model.)

B. HUBER.

CHROMATIC PRINTING MACHINE.

No. 368,532.

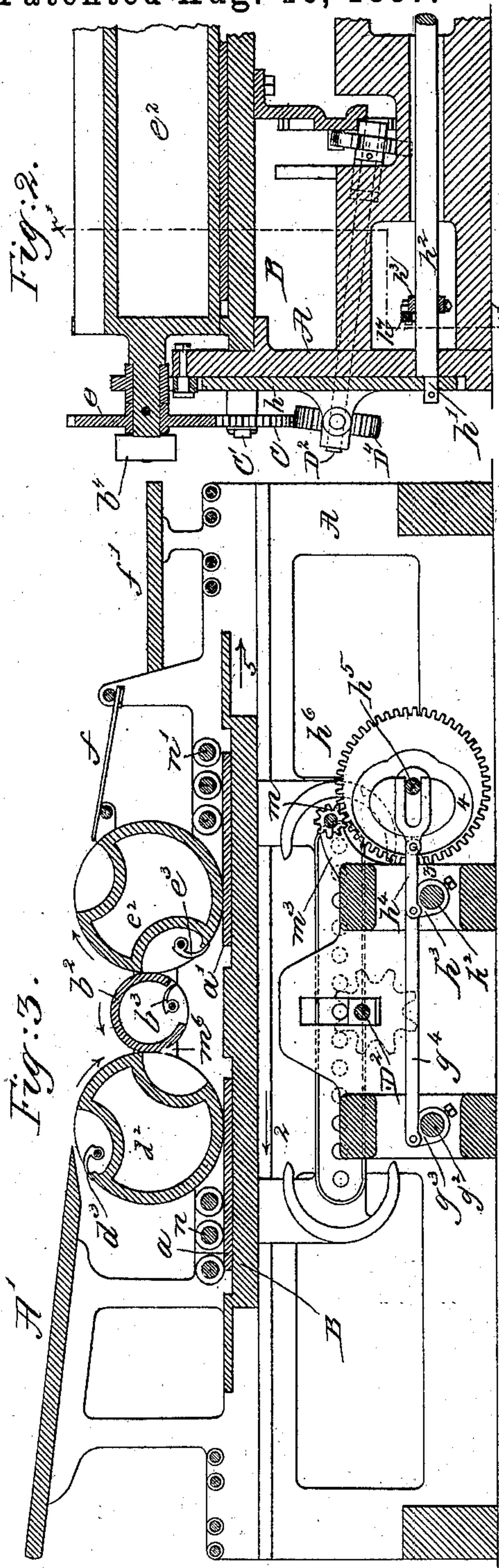
Patented Aug. 16, 1887.



Witnesses.

Arthur Zipperlin

John F. C. Brinkley



Inventor.

Berthold Huber.

Crosby Gregory attys.

UNITED STATES PATENT OFFICE.

BERTHOLD HUBER, OF TAUNTON, MASSACHUSETTS, ASSIGNOR TO THE
HUBER PRINTING-PRESS COMPANY, OF SAME PLACE.

CHROMATIC-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 368,532, dated August 16, 1887.

Application filed September 8, 1886. Serial No. 212,980. (No model.)

To all whom it may concern:

Be it known that I, BERTHOLD HUBER, of Taunton, county of Bristol, and State of Massachusetts, have invented an Improvement in
5 Chromatic-Printing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object to improve the construction of that class of press employed for printing two colors on the same side of a sheet by a continuous operation, the press herein shown as embodying my inven-
15 tion containing two forms carried by a reciprocating bed, two impression-cylinders, one for each form, and an intermediate transferring-cylinder.

The impression-cylinders are caused to make
20 two rotations during each complete stroke of the bed carrying the forms, each cylinder co-operating with one form to print during the forward stroke of the bed, and being lifted so as not to come in contact with the form as the
25 bed is moving in its back-stroke, the intermediate transferring-cylinder making four rotations to each complete stroke of the bed, the said transferring-cylinder having suitable grippers to take the printed sheet from the
30 first impression-cylinder located nearest the feed-board and deliver it to the grippers of the second impression-cylinder, from which it is delivered to the fly in the usual manner. These three cylinders have their journals ar-
35 ranged in a frame composed of several pieces, which are adapted to be moved vertically in unison by suitable devices, herein shown as eccentrics carried by shafts extended across the press.

40 My invention consists, essentially, in a reciprocating bed provided with two forms, two impression-cylinders co-operating therewith, an intermediate transferring-cylinder, and slide plates or rods and a cross-bar to sustain
45 the journals of the said impression and transferring cylinders, combined with means to operate the said plates or rods and cross-bar, whereby the impression-cylinders and the transferring-cylinder are lifted during a part
50 of each complete stroke of the bed, substantially as will be described.

Other features of my invention will be hereinafter pointed out and claimed in the claims at the end of this specification.

Figure 1 in side elevation represents a suffi- 55
cient portion of a press embodying my invention to enable the same to be understood. Fig. 2 is a partial cross-section in the line $x x$, Fig. 1, looking toward the left. Fig. 3 is a longitudinal section in the irregular dotted line $x' x'$ 60
of Fig. 2.

The frame-work A, of suitable shape to contain the working parts, has erected upon it at one end suitable standards for the feed-board A'. 65

The frame-work has suitable ways for the reception and guidance of the bed B, which in operation serves to carry two forms, $a a'$, the said bed, constituting the form-carrier, being reciprocated longitudinally by means substan- 70
tially as shown in my Patent No. 285,750, dated September 25, 1883.

In the patent referred to the diagonal shaft D^2 , employed to reciprocate the bed, is shown as adapted to be driven from a toothed gear 75
connected to the journal of the impression-cylinder; but herein the said shaft derives its motion of rotation from an intermediate gear, C, on a stud, C' , the said intermediate engaging and driving the gear D^4 on the shaft D^2 , 80
and being driven by the gear b on the shaft b' of the transferring-cylinder b^2 , it having a set of grippers, b^3 . The shaft b' at one end has a belt-pulley, b^4 , which receives upon it a belt to drive the moving parts of the machine. 85
The gear b on the driven shaft b' , besides driving the intermediate referred to, also engages the toothed gears $d e$, fastened, respectively, to the journals $d' e'$ of the first and second im- 90
pression-cylinders $d^2 e^2$. The impression-cylinder d^2 has usual grippers, d^3 , and the cylinder e^2 usual grippers, as e^3 . The journals d' of the first impression-cylinder, d^2 , has its bearings in sliding plates g , one at each side the frame- 95
work, the lower ends of the said plates embracing eccentrics, as g' , (shown by dotted lines, Fig. 1,) carried by a shaft, g^2 , having an attached arm, g^3 . The journal e' of the second im-
pression-cylinder, e^2 , has its bearings in sliding plates h , one at each side of the frame, the 100
lower ends of the said plates embracing eccentrics h' on the shaft h^2 , having an arm, h^3 ,

The arms g^3 and h^3 are connected by a link, g^4 , and the arm h^3 has attached to it a link, h^4 , the opposite end of which is bifurcated to embrace the cam-shaft h^5 , the said link h^4 having at one side a roller or other stud, 3, which enters the cam-groove 4 in the cam-gear h^6 , fast on the said shaft h^5 , the said cam deriving its motion of rotation from the pinion m , forming part of a toothed gear, m' , mounted to turn on a stud, m^2 , held in a stand, m^3 , secured to one of the cross-stays of the frame-work. The gear m' is engaged by an intermediate, m^4 , which is rotated by the gear e , attached to the cylinder e^2 .

The cam-gear h^6 is rotated once for each complete stroke of the bed B, and through the links h^4 g^4 acts to turn the two shafts h^3 g^3 , the eccentrics thereon lifting the sliding plates h and g , and with them the two impression-cylinders, in order that the bed with its forms may be moved backward in the direction of the arrow 5, during which movement the forms are not used to print.

It will be noticed that the two cylinders d^2 and e^2 both rotate in the same direction, and each is made to print at the same time and while the bed is being moved forward in the direction of arrow 2, each impression-cylinder acting in succession upon the same side of the same sheet, two sheets being, however, printed at the same time.

As herein shown, the position of the parts and the time of rotation is such that the second form, a' , comes into operation about as the first form and its co-operating cylinder d^2 has completed about one-half of the impression to be made thereby. The two cylinders are raised together, as stated, as the bed completes its forward stroke.

In order that the toothed gear b , referred to, may continue to be the driver for the two impression-cylinders and drive them at the same uniform speed, and so, also, that the said cylinders may be lifted vertically, I have mounted the journal of the transferring-cylinder b in a cross-bar, m^6 , (entirely shown by dotted lines, Fig. 1, and partially by full lines in Fig. 3,) one end of the said cross-bar being jointed to the sliding plate h , its other end being forked to embrace a stud, 8, on an ear of the sliding plate g .

The cross-bar m^6 is raised in unison with the sliding plates, the described connection between the said cross-bar and the said sliding plates accommodating for the slight vibration of the lower ends of the said plates as they are being reciprocated by the eccentrics, the teeth of the gear b and of the intermediate C being of such length and shape as to permit a slight rise of the gear b without disengaging it from the said intermediate, the upward movement of the cylinders referred to being in practice about three-sixteenths of an inch long, or just sufficient to elevate the impression-cylinders clear from the forms with which they co-operate during the backward stroke of the said bed.

The forms a and a' will be provided with ink from form-rolls n n' , in usual manner.

The grippers d^3 , b^3 , and e^3 will all be moved in usual manner by usual devices, not necessary to be herein shown.

The grippers d^3 will take the sheet from the feed-board A' and carry it under the said cylinder in contact with the form a when the bed is being moved in the direction of the arrow 2.

In Fig. 3 the cylinder d^2 is in the position it will occupy when the sheet held by the grippers d^3 has nearly been printed.

In the further rotation of the cylinder d^2 the grippers d^3 will give up the sheet to the grippers b^3 of the transferring-cylinder b^2 , it making two rotations for one of the said cylinder, so that the said transfer-cylinder takes the once-printed sheet and carries it around underneath it for one complete rotation and half of another rotation, at which time the grippers b^3 arrive opposite the grippers e^3 of the impression-cylinder e^2 , the transfer delivering the sheet from its grippers at a point diametrically opposite the point at which it received the said sheet.

The sheet taken by the grippers e^3 of the cylinder e^2 is carried nearly one and one-half time about the said cylinder before it gives it up to the fly f , operated in usual manner, which in turn lays the twice-printed sheet upon the fly-board f' , printed side down.

I do not desire to limit my invention to the use of sliding plates of the exact construction shown, nor to the exact devices for raising and lowering the said plates, for instead of the said plates I might employ connecting-rods, and instead of the rocking shafts and eccentrics I might employ a semi-rotating crank.

I do not herein claim the combination of a reciprocating bed having two forms, two impression-cylinders driven continuously in the same direction and provided with grippers, and a single transfer-cylinder provided with grippers and arranged between the impression-cylinders, arranged to make an impression upon the sheet at and by the first impression-cylinder and form, and then transfer the sheet, same side up, to the second impression-cylinder to receive the second impression from the other form, the same being claimed in my application Serial No. 156,267.

I claim—

1. In a printing-press, a reciprocating bed provided with two forms, two impression-cylinders co-operating therewith, an intermediate transferring-cylinder, and slide plates or rods and a cross-bar to sustain the journals of the said impression and transferring cylinders, combined with means to operate the said plates or rods and cross-bar, whereby the impression-cylinders and the transferring-cylinder are lifted during a part of each complete stroke of the bed, substantially as described.

2. In a printing-press, a reciprocating bed having two forms, two impression-cylinders, each co-operating with one of said forms, a transferring-cylinder interposed between said

impression-cylinders, and grippers on all of
said cylinders, combined with gearing, sub-
stantially such as set forth, connecting the
transferring-cylinder as a driver, the two im-
5 pression-cylinders, and the bed to rotate the
impression-cylinders twice to one complete
movement of the bed and rotate the transfer-
ring-cylinder four times during the same in-
terval, substantially as specified.

10 3. In a printing-press, a bed having two
forms, a shaft, D^2 , and intermediate gearing
to reciprocate said bed, a gear, D^4 , on the said
shaft D^2 , the two impression-cylinders and
their connected gears d and e , and the posi-
tively-rotated transferring-cylinder b^2 and its 15
connected gear b , in mesh with and rotating
the two gears d and e and the said impres-
sion-cylinders, combined with an intermediate
gear located between the gear b and the said
gear D^4 , to operate all substantially as de- 20
scribed.

In testimony whereof I have signed my name
to this specification in the presence of two sub-
scribing witnesses.

BERTHOLD HUBER.

Witnesses:

W. K. HODGMAN,

E. P. COLEMAN.