

No. 637,586.

Patented Nov. 21, 1899.

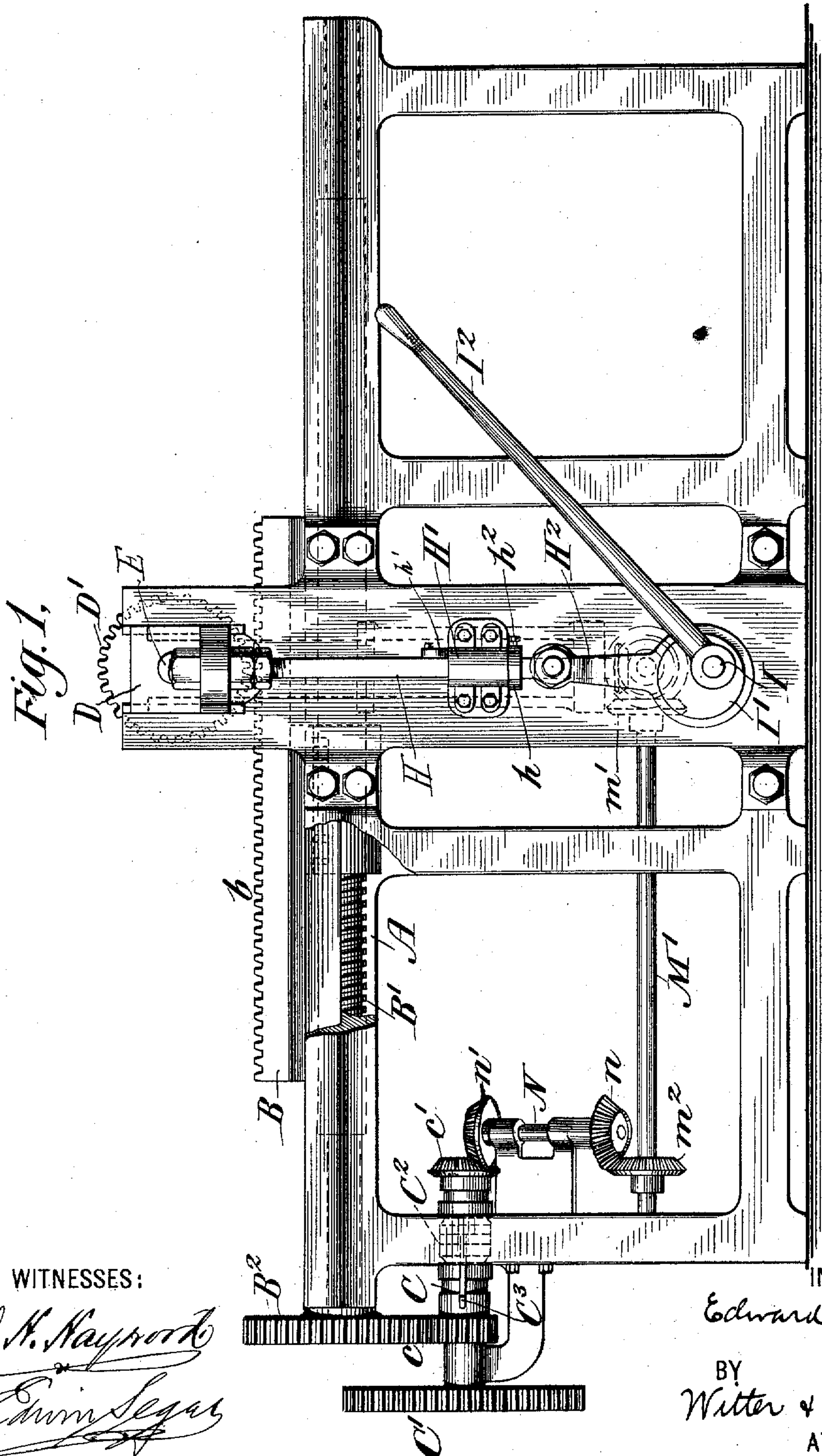
E. HETT.

TRANSFERRING OR TURNING OVER MACHINE.

(Application filed Jan. 31, 1898.)

(No Model.)

3 Sheets—Sheet 1.



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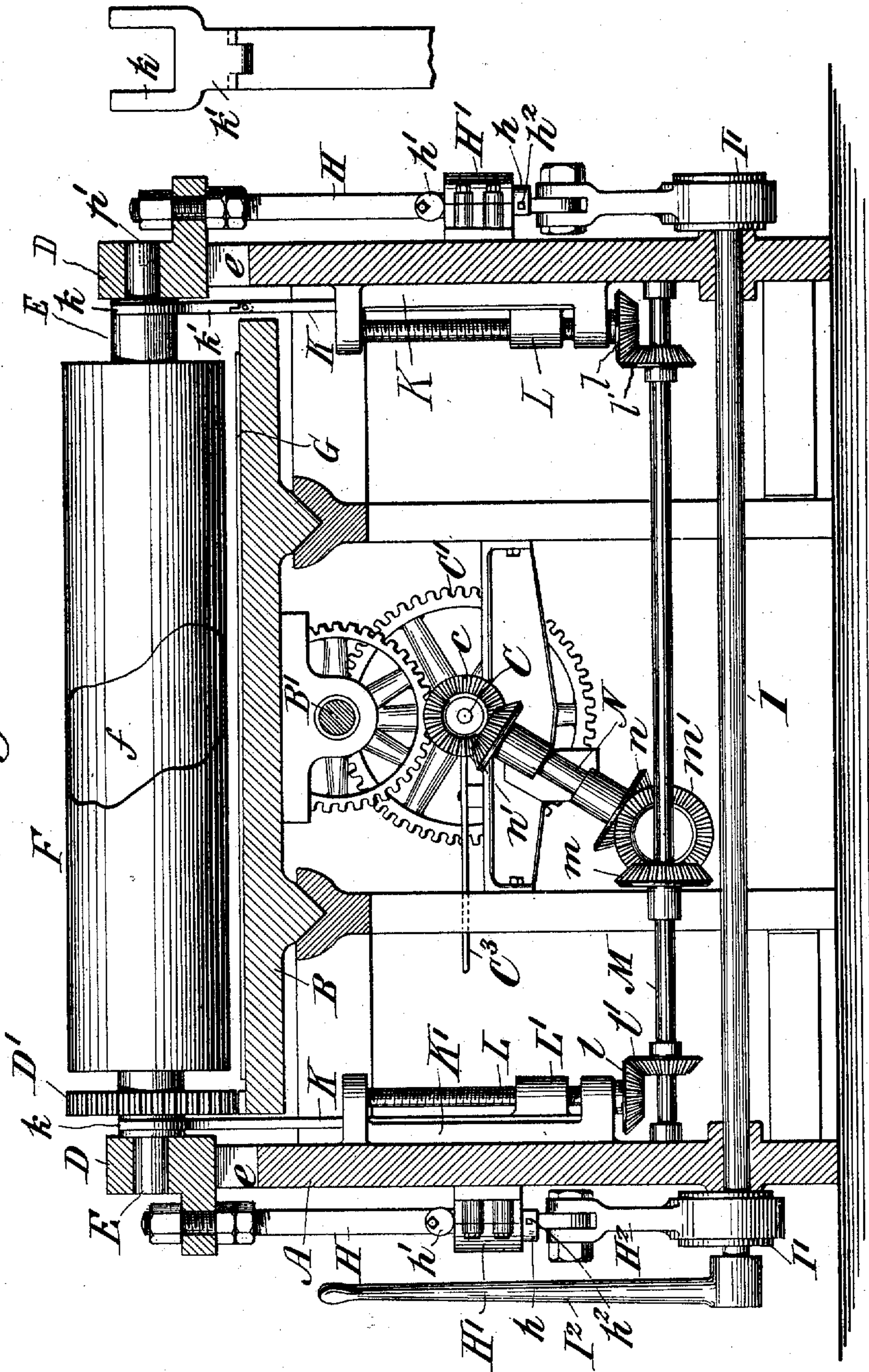
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3 Sheets—Sheet 2.

Fig. 2.



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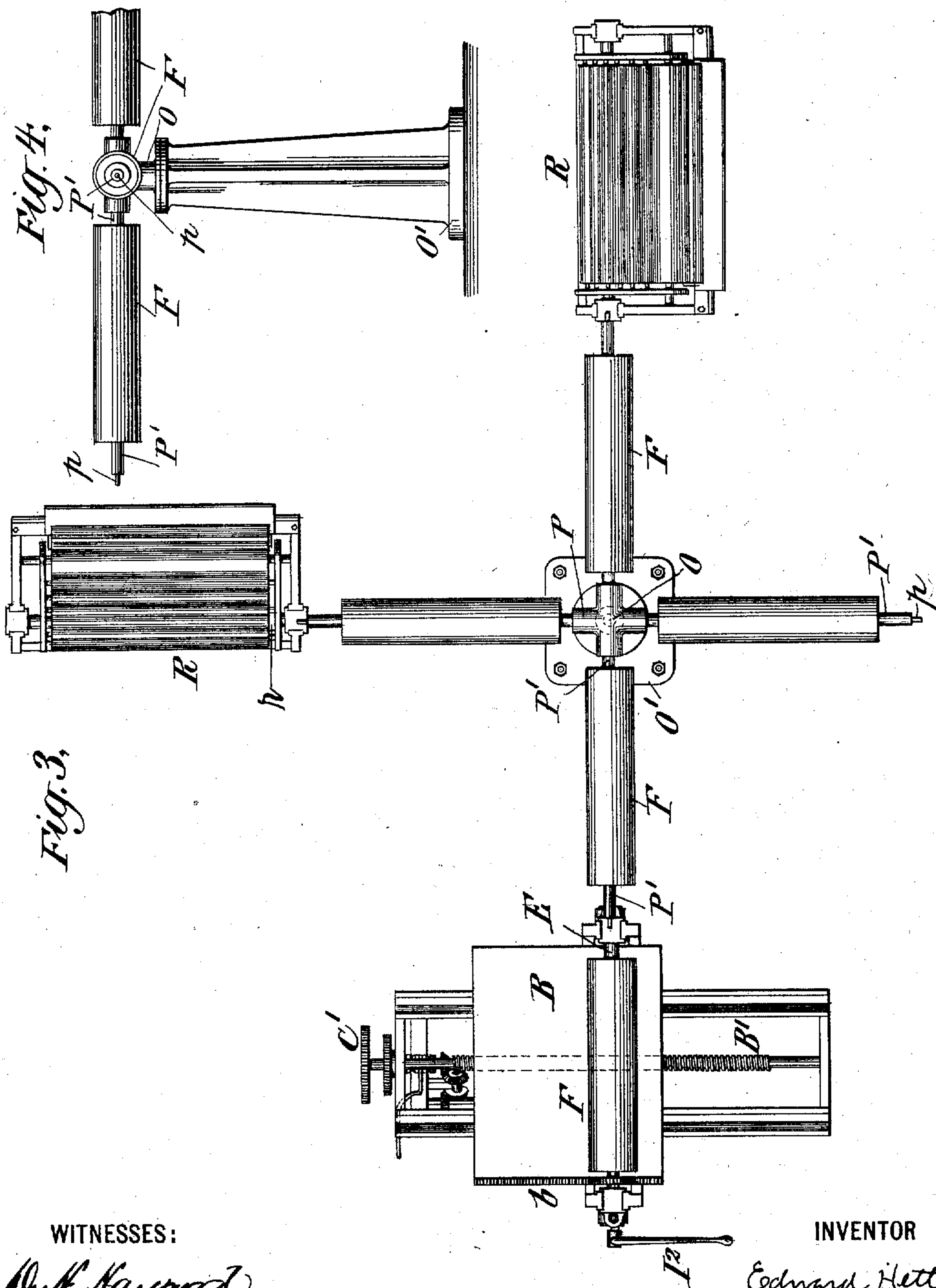
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(Application filed Jan. 31, 1898.)

(No Model.)

3 Sheets—Sheet 3.



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EDWARD HETT, OF NEW YORK, N. Y.

TRANSFERRING OR TURNING-OVER MACHINE.

SPECIFICATION forming part of Letters Patent No. 637,586, dated November 21, 1899.

Application filed January 31, 1898. Serial No. 668,586. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HETT, a citizen of the United States, and a resident of New York, (New Dorp,) in the county of Richmond, State of New York, have invented certain new and useful Improvements in Transferring or Turning-Over Machines, of which the following is a specification.

This invention relates to a transfer or turning-over machine designed to be employed in the art of lithographic or planographic transferring of a design to a printing-surface.

It also relates to certain devices associated with or forming part of such machine, but which may also be employed in other machines—such as rolling-up machines, lithographic or planographic, or other machines working with or upon a printing-surface. The purpose of the said devices is to facilitate the handling of the form or printing-surface in removing it from and depositing it into its place in such machine.

The invention consists of the structure and the various combinations of elements hereinafter pointed out.

The accompanying drawings, forming part of this specification and in which like reference-letters designate similar parts, illustrate one embodiment of the invention in connection with a planographic or lithographic transfer or turning-over machine.

Figure 1 is a side elevation of a planographic or lithographic transfer or turning-over machine embodying part of the invention. Fig. 2 is a central vertical sectional elevation of the same. Fig. 3 is a plan view of a transfer or turning-over machine and a receiving and transporting apparatus located in proper relation to a lithographic rolling-up machine and embodying the invention, and Fig. 4 is a side elevation of the receiving and transporting apparatus.

A is the frame of the transfer or turning-over machine, carrying a reciprocating bed B, driven by a screw B', geared therewith. The screw B' carries a gear-wheel B², meshing with a pinion c, loose on the shaft C, which carries a driving gear-wheel C', adapted to be driven in either direction by a suitable motor. The pinion c is made fast on the shaft C by means of the clutch C² and clutch-lever C³. The bed B is provided with a rack b, for

a purpose hereinafter described. D are adjustable bearing-boxes arranged to receive and support the shaft E, carrying a rounded or tubular removable printing-surface F. This printing-surface F generally consists of an outer shell carried by and removable from a form cylinder or carrier f, fast on the shaft E. The bearing-boxes are supported in slots e in the frame A, so as to be adjustable therein, whereby the printing-surface may be brought into contact with the bed B or the setting-up plate G, carried thereby, and may also be separated slightly therefrom, as shown in Fig. 2. The shaft E carries a gear-wheel D', adapted to mesh with the rack b, so that when the bed is driven the printing-surface F may be thereby rotated in contact with the setting-up plate on the bed. In the present embodiment of the invention these bearing-boxes are supported by the pressure-arms H, working in guides H', which are secured to the sides of the frame A, and the arms H are pivotally connected at their lower ends to the eccentric-arms H², which are operated by eccentrics I', carried on the rock-shaft I, worked by the lever I². When the lever I² is lifted, as shown in Figs. 1 and 2, the pressure-arms H raise the bearing-boxes D and separate the printing-surface F from the bed, at the same time throwing the wheel D' out of gear with the rack b and enabling the tubular printing-surface F to be rotated or the bed B moved without either operating the other. When the lever is depressed, the arms H and bearing-boxes D are moved down, so as to bring the wheel D' and rack b into gear and the printing-surface and setting-up plate into contact, which may be made as firm as required by suitable pressure on the lever I².

The means described for operating the arms H are those preferred; but it should be understood that other means for this purpose may be employed without departing from my invention. In order to limit the upward movement of the arms H, suitable stops are provided. As shown in the accompanying drawings, these stops consist of collars h, adjustable by means of set-screws h² and carried by the arms H beneath the guides H', so as to strike against the guides when the arms have been elevated to the predetermined height. In order to sustain the arms H and bearing-

boxes D in elevated position and prevent their return movement until desired, suitable holding devices are provided. These generally consist of eccentrically-pivoted buttons or pieces h' on the arms H above the guides H', whereby when the arms have been elevated the pieces h' drop down upon the tops of the guides and sustain the bearing-boxes in elevated position. Other means of course than the collars h and pieces h' may be employed to accomplish their purposes without departing from the invention.

The transfer or turning-over machine described is designed to be generally employed simply for the purpose of transferring or turning over lithographic transfers from the setting-up plate to the rounded or tubular printing-surface F. When a set of transfers has been turned over onto a printing-surface, that printing-surface is removed from the machine and another is put in its place to receive another set of transfers, the first surface being carried away to be prepared or developed into the character of printing-surface required, whether planographic, relief, or intaglio. This may generally be done in a rolling-up machine whose sole function is to roll up and prepare the surface for printing. In order that the printing-surfaces may be quickly handled in mounting them in and unmounting them from their working position in the transfer or turning-over machine or other machine in which removable printing-surfaces are employed or manipulated, I provide means supported on the frame of such machine for this purpose, and I also provide an arm generally carried on a stand arranged to receive a rounded or tubular printing-surface from the turning-over machine and to carry it, if need be, to a rolling-up machine, this stand also being employed to support the printing-surface, so that it may be easily shifted to its place in the transfer or turning-over or other machine. I will now describe these means for handling the printing-surface.

K are lifting-arms having bifurcations k at their upper end and carried by the frame A of the machine, so as to be vertically movable. One of these arms K has its upper end k' jointed, for a purpose to be presently described. The means best adapted for operating these lifting-arms consist of slideways K', in which the arms move, and screws L, supported by the frame and passing through threaded collars L', fast on the arms K. When the screws turn, the arms are driven up or down, according to the direction of rotation. The screws are generally geared with a shaft M, as by means of the beveled gear-wheels l and l' , and the shaft M is preferably geared with the driving-wheel C' through a suitable train of gearing, as the gear-wheel m on the shaft M, beveled gear-wheels m' and m^2 on the shaft M', beveled gear-wheels n and n' on shaft N, and beveled gear-wheel c' , loose

on the driving-shaft C and arranged to be locked thereon by the clutch C² and clutch-lever C³. By operating this lever C³ the main driving-wheel C' may be thrown into gear with the screw B', so as to drive the bed B, and when the printing-surface F is lowered, with its gear-wheel D' in mesh with the rack b , the bed drives the printing-surface, which at this time is in contact with the bed or the setting-up plate carried thereby. When the clutch-lever C³ is reversed, the bed is thrown out of gear and the beveled gear c' is made fast on the shaft C, so as to gear up the drive-wheel C' with the shaft M, through the train of gearing above described, and operate the screws L to raise or lower the arms K, whereby the printing-tube may be raised from or lowered into its working position, so as to be easily shifted from or to the shaft E. In removing a tube F from its working position the bearing-boxes D are first disconnected from the pressure-arms H, and the lifting-arms K are then raised so as to lift the shaft D and tube F above the frame A to permit the tube to be slipped from the shaft. When the tube is slipped from the shaft, it is slipped onto an arm of the stand above referred to and now to be described.

The stand in its preferred construction comprises a standard O, fixed in a suitable base O', which is generally bolted to the floor near the frame A. The standard O carries a rotatable head P, provided with one or more arms P', adapted to support a rounded or tubular printing-surface F. The stand is so located that the arms P' may be brought into alinement with the shaft E when the shaft is lifted by its lifting-arms K to remove the tube F. Before the tube may be slipped from its shaft E, however, the bearing-box D opposite the stand must be slipped from the end of the shaft E and the arm K opposite the stand must be moved out of the way, and this requires the provision of some other suitable support to hold the shaft in fixed alinement with the arm P' about to receive the tube F. To get the arm K out of the way, I joint its upper bifurcated end k' to the main portion of the arm, so that this jointed end may be turned down below the shaft E and tube F out of the way, this end of the shaft being first supported by other suitable means. The best supporting means for this purpose now known to me is the arm P', whose outer end is arranged to couple with the end of the shaft E by means of suitable devices, such as a bolt p , carried by the arm P' and arranged to slide into a recess p' in the end of the shaft E. It will thus be seen that the arm P' and shaft E form practically a single continuous shaft supported at its ends by one arm K and the standard O, along which the tube F may be quickly slipped from the shaft E to the arm P'. After this has been done the arm and shaft are then uncoupled and the arm and tube revolved on the standard, and, if

desired, the tube is then slipped from the arm P' onto a shaft of another machine—as, for instance, a rolling-up machine R.

The shaft *r* of the rolling-up machine, which receives the printing-surface F, is arranged to couple with the arm P' in the same way as the shaft E couples with the arm P'.

While I have shown part of my handling devices as embodied in a transfer or turning-over machine, I do not wish to be understood as limiting the invention to the use of these devices in such a machine only, inasmuch as they may also be embodied in other machines wherein a printing-surface is manipulated preparatory to using it to carry on its printing function—as, for example, a rolling-up machine—or in which a printing-surface is used to carry on its printing function.

It is to be observed that the arms K K' or other means for moving the carrier for the printing-surface to and from its working position in the machine may be arranged so as to work in any convenient manner or in any desired direction and that the arms may be variously arranged without departing from my invention, so that one may be got out of the way of the printing-surface while the printing-surface is being withdrawn from or mounted on its carrier.

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

1. The combination in a machine designed to work with or upon a printing-surface, of a carrier for the printing-surface adapted to removably and replaceably support a printing-surface, a pair of arms supported on the frame of the machine for moving said carrier to and from its working position in the machine, one of said arms being arranged for separate withdrawal from engagement with the carrier while the other is in engagement therewith.

2. The combination in a machine designed to work with or upon a printing-surface, of a carrier for the printing-surface adapted to removably and replaceably support a printing-surface, a pair of arms supported on the frame of the machine for moving said carrier to and from its working position in the machine, one of said arms being arranged for separate withdrawal from engagement with the carrier while the other is in engagement therewith, and means for operating said arms.

3. The combination in a machine designed to work with or upon a printing-surface, of a carrier for the printing-surface adapted to removably and replaceably support a printing-surface, a pair of arms supported on the frame of the machine for moving said carrier to and from its working position in the machine, one of said arms being arranged for separate withdrawal from engagement with the carrier while the other is in engagement therewith, screws operatively connected with said arms, and means for turning the screws.

4. The combination in a machine designed to work with or upon a printing-surface, of a

carrier for the printing-surface adapted to removably and replaceably support a printing-surface, a pair of arms supported on the frame of the machine for moving said carrier to and from its working position in the machine, one of said arms being provided with a joint whereby it may be withdrawn from engagement with the carrier while the other arm is in engagement therewith.

5. The combination in a machine designed to work with or upon a curved printing-surface, of a carrier for the printing-surface adapted to removably and replaceably support a curved printing-surface, means supported on the frame of the machine for moving said carrier to and from its working position in the machine; with a receiving-arm adapted to be held in fixed alinement with said carrier when moved from its working position by said means, whereby a printing-surface may be slipped from the carrier upon said receiving-arm or the reverse.

6. The combination in a machine designed to work with or upon a curved printing-surface, of a carrier for the printing-surface adapted to removably and replaceably support a curved printing-surface, a pair of arms supported on the frame of the machine for moving said carrier to and from its working position in the machine; with a receiving-arm adapted to be held in fixed alinement with said carrier when moved from its working position by said arms, whereby a printing-surface may be slipped from the carrier upon said receiving-arm or the reverse.

7. The combination in a machine designed to work with or upon a curved printing-surface, of a carrier for the printing-surface adapted to removably and replaceably support a curved printing-surface, means supported on the frame of the machine for moving said carrier to and from its working position in the machine; with a receiving-arm adapted to be coupled in fixed alinement with said carrier when moved from its working position by said means, whereby a printing-surface may be slipped from the carrier upon said receiving-arm or the reverse.

8. The combination in a machine designed to work with or upon a curved printing-surface, of a carrier for the printing-surface adapted to removably and replaceably support a curved printing-surface, a pair of arms supported on the frame of the machine for moving said carrier to and from its working position in the machine; with a receiving-arm adapted to be held in fixed alinement with said carrier when moved from its working position by said arms, whereby a printing-surface may be slipped from the carrier upon said receiving-arm or the reverse, said arms being so arranged that while one arm is supporting one end of the said carrier for the printing-surface the other arm may be withdrawn from the path of travel of the printing-surface to or from its carrier.

9. In a machine designed to work with or

upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, and a pair of lifting-arms carried by the frame and arranged to lift said printing-surface from its working position in the machine, one of the lifting-arms being jointed near its upper end, substantially as set forth.

10. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, and a pair of lifting-arms carried by the frame arranged to lift said printing-surface from its working position in the machine, one of the lifting-arms being jointed near its upper end, and means for operating the lifting-arms, substantially as set forth.

11. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, and a pair of lifting-arms carried by the frame arranged to lift said printing-surface from its working position in the machine, one of the lifting-arms being jointed near its upper end, and screws operatively connected with the lifting-arms and means for turning said screws, substantially as set forth.

12. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a carrier for a removable and replaceable rounded or cylindrical printing-surface in proper relation to the setting-up plate, and a pair of vertically-moving lifting-arms carried in suitable slideways mounted on the frame beneath the bearing-boxes and arranged to lift said printing-surface from its position in the machine, one of said arms being arranged for separate withdrawal from separate engagement with the carrier while the other arm is in supporting engagement therewith, and means for actuating the said lifting-arms, substantially as set forth.

13. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, and a pair of vertically-moving lifting-arms carried in suitable slideways mounted on the frame beneath the bearing-boxes and arranged to lift said printing-surface from its position in the ma-

chine, one of said arms being arranged for separate withdrawal from separate engagement with the carrier while the other arm is in supporting engagement therewith, screws for actuating the lifting-arms, and means for turning the screws, substantially as set forth.

14. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, pressure-arms connected with the bearing-boxes, a pair of lifting-arms carried by the frame and arranged to lift the printing-surface from its position in the machine, substantially as set forth.

15. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, pressure-arms connected with the bearing-boxes, a pair of lifting-arms working in fixed slideways carried by the frame and arranged to lift the printing-surface from its position in the machine, substantially as set forth.

16. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, pressure-arms connected with the bearing-boxes, a pair of lifting-arms carried by the frame and arranged to lift the printing-surface from its position in the machine, screws for actuating the lifting-arms and means for turning the screws, substantially as set forth.

17. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, pressure-arms connected with the bearing-boxes, a pair of lifting-arms carried by the frame and arranged to lift the printing-surface from its position in the machine, screws for actuating the lifting-arms, each provided with a gear-wheel, a shaft geared with said gear-wheels, and means for driving the shaft, substantially as set forth.

18. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, pressure-arms connected with the bearing-boxes, means to limit the movement of the bearing-boxes in separating the setting-up plate and printing-surface, and holding devices arranged to prevent the re-

turn movement of the bearing-boxes, substantially as set forth.

19. In a machine designed to work with or upon a printing-surface, the combination of a
5 suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, pressure-arms connected
10 with the bearing-boxes, and guides for the pressure-arms fixed on the frame, the pressure-arms being provided with stops on one side of the guides whereby the movement of the arms in one direction is limited, and being
15 also provided with holding devices on the other side of the guides whereby the pressure-arms after being arrested by the stops may be temporarily held, substantially as set forth.

20. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or
25 cylindrical printing-surface in proper relation to the setting-up plate, pressure-arms connected with the bearing-boxes, and guides for the pressure-arms fixed on the frame, the pressure-arms being provided with adjustable stops on one side of the guides whereby
30 the movement of the arms in one direction is limited, and being also provided with automatic holding devices on the other side of the guides whereby the pressure-arms after being arrested by the stops may be temporarily held, substantially as set forth.

21. In a machine designed to work with or upon a printing-surface, the combination of a suitable frame, a support carried thereby
40 adapted to receive a setting-up plate, bearing-boxes adapted to support a rounded or cylindrical printing-surface in proper relation to the setting-up plate, pressure-arms connected with the bearing-boxes, a rock-shaft provided with cams to actuate the pressure-arms, guides for the pressure-arms fixed
45 on the frame, the pressure-arms being provided with stops on one side of the guides whereby the movement of the arms in one direction is limited, and being also provided with holding devices on the other side of the guides whereby the pressure-arms after being arrested by the stops may be temporarily held, a pair of lifting-arms working in vertical
50 slideways carried by the frame beneath the bearing-boxes, one of said arms being jointed near its upper end, screws for actuating the lifting-arms, a shaft geared with said screws and means for driving the shaft, substantially as set forth.

22. The combination, in a transfer or turning-over machine, of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes carried by the
65 frame, a shaft journaled in said bearing-boxes and adapted to receive and support a

printing-tube in proper relation to the setting-up plate, lifting-arms carried by the frame and arranged to lift said shaft from its working position in the machine, with a
70 stand having one or more receiving-arms adapted to be held in fixed alinement with the said shaft whereby when the shaft is elevated by the lifting-arms a printing-tube may be slipped from the shaft to the arm or from the arm to the shaft, substantially as set forth.

23. The combination, in a transfer or turning-over machine, of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes carried by the
80 frame, a shaft journaled in said bearing-boxes and adapted to receive and support a printing-tube in proper relation to the setting-up plate, lifting-arms carried by the frame and arranged to lift said shaft from its working
85 position in the machine, with a stand having one or more receiving-arms adapted to be coupled in fixed alinement with the said shaft whereby when the shaft is elevated by the lifting-arms a printing-tube may be slipped
90 from the shaft to the arm or from the arm to the shaft, substantially as set forth.

24. The combination, in a transfer or turning-over machine, of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes carried by the
95 frame, a shaft journaled in said bearing-boxes and adapted to receive and support a printing-tube in proper relation to the setting-up plate, lifting-arms carried by the frame and arranged to lift said shaft from its working
100 position in the machine, with a stand having one or more revoluble receiving-arms adapted to be held in fixed alinement with the said shaft whereby when the shaft is elevated by the lifting-arms a printing-tube may be slipped from the shaft to the arm and from the arm to the shaft, substantially as set forth.

25. The combination, in a transfer or turning-over machine, of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes carried by the
110 frame, a shaft journaled in said bearing-boxes and adapted to receive and support a printing-tube in proper relation to the setting-up plate, lifting-arms carried by the frame and arranged to lift said shaft from its working position in the machine, with a stand having one or more revoluble receiving-arms adapted to be coupled in fixed alinement with the said
120 shaft whereby when the shaft is elevated by the lifting-arms a printing-tube may be slipped from the shaft to the arm or from the arm to the shaft, substantially as set forth.

26. The combination, in a transfer or turning-over machine, of a suitable frame, a support carried thereby adapted to receive a setting-up plate, bearing-boxes carried by the
125 frame, a shaft journaled in said bearing-boxes and adapted to receive and support a printing-tube in proper relation to the setting-up plate, lifting-arms carried by the frame and
130

arranged to lift said shaft from its working position in the machine, one of said arms being jointed near its upper end, screws for actuating the lifting-arms and means for turning
5 ing the screws, with a stand having one or more receiving-arms adapted to be held in fixed alinement with the said shaft whereby when the shaft is elevated by the lifting-arms a printing-tube may be slipped from the shaft

to the arm or from the arm to the shaft, substantially as set forth.

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

EDWARD HETT.

Witnesses:

SIDNEY MANN,
EDWIN SEGER.