

No. 637,580.

Patented Nov. 21, 1899.

E. HETT.

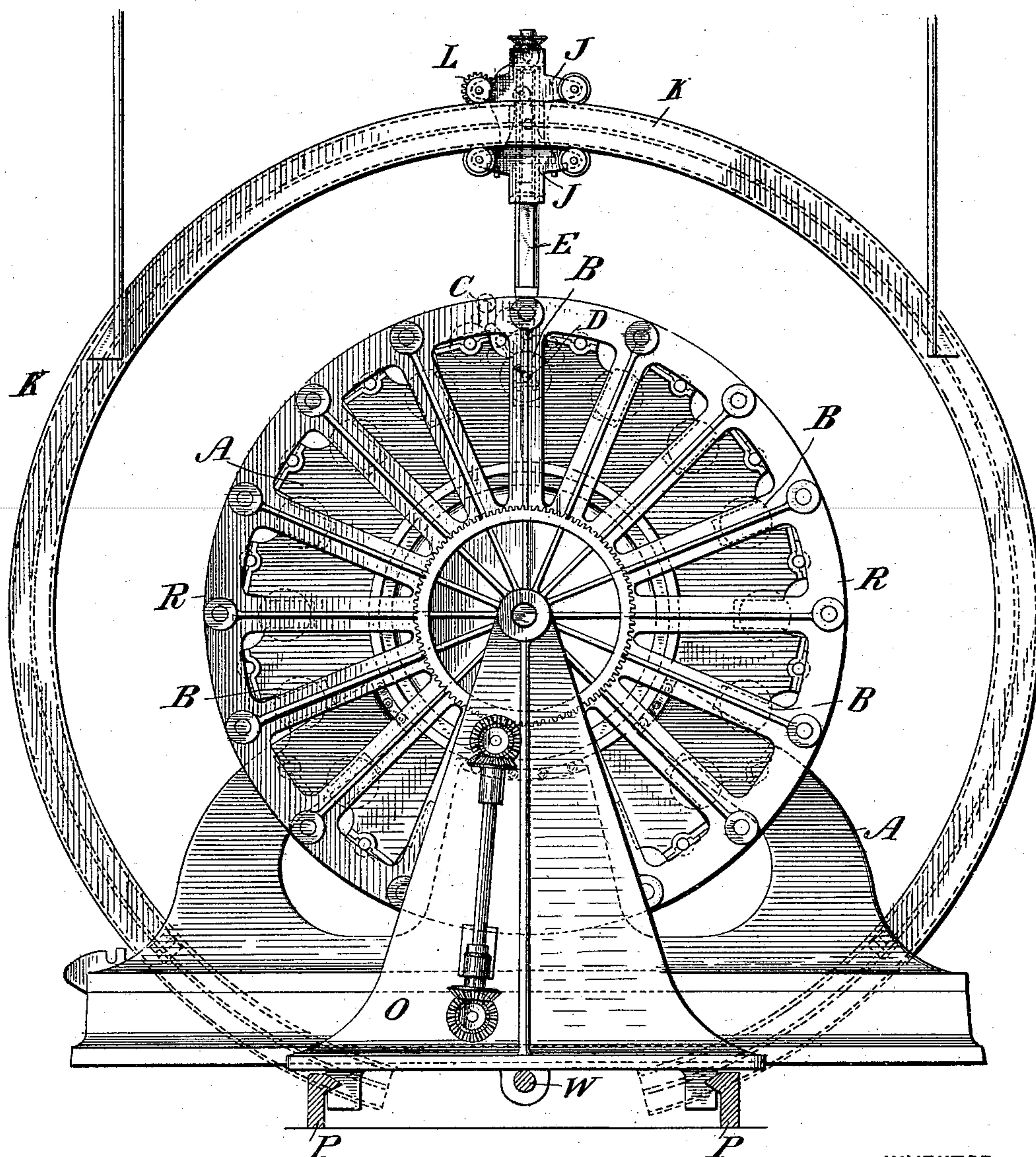
APPARATUS FOR HANDLING PRINTERS' CYLINDERS OR TUBES.

(Application filed Feb. 11, 1896. Renewed July 12, 1898.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1,



WITNESSES:

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4 Sheets—Sheet 2.

Fig. 2,

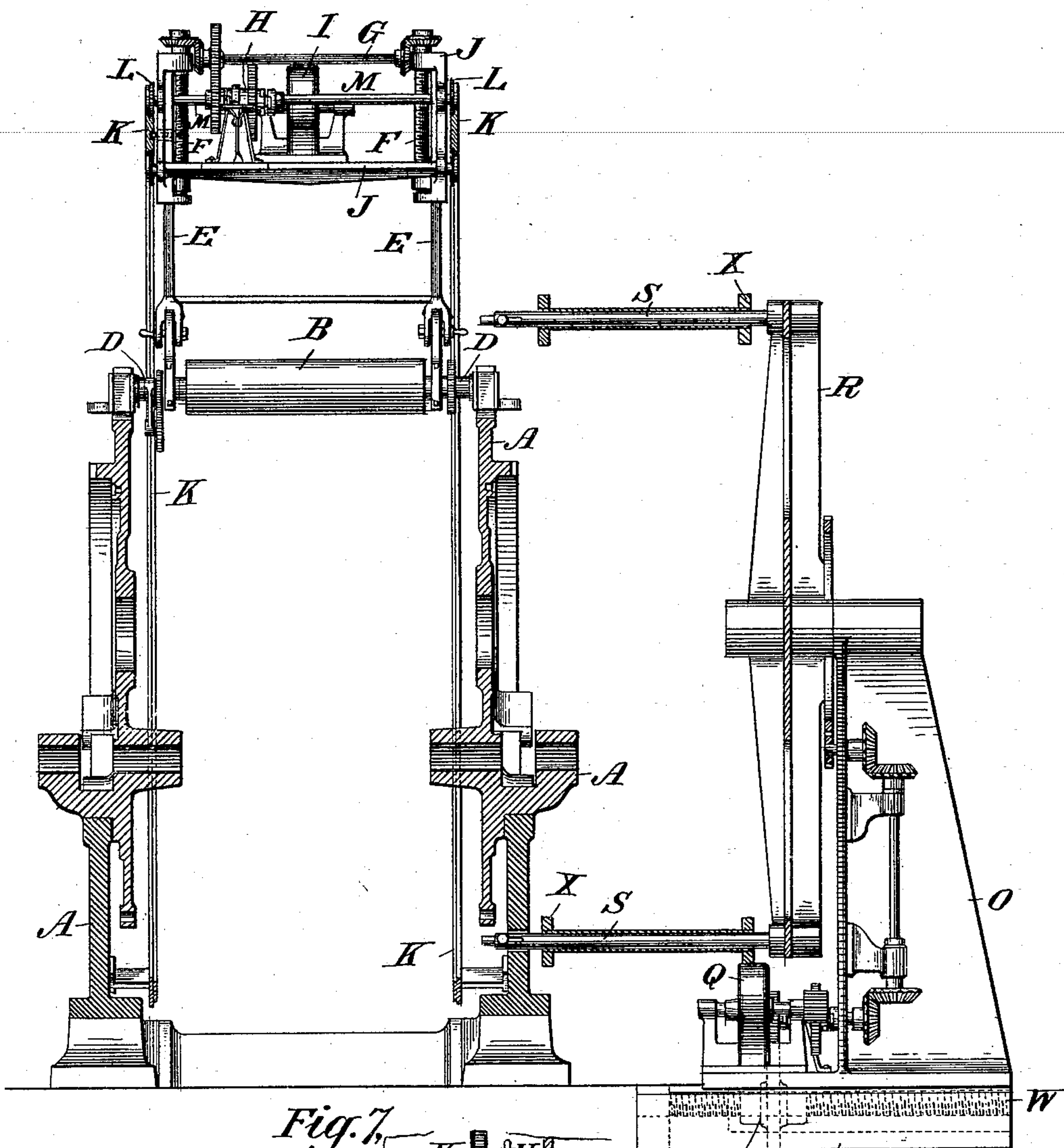
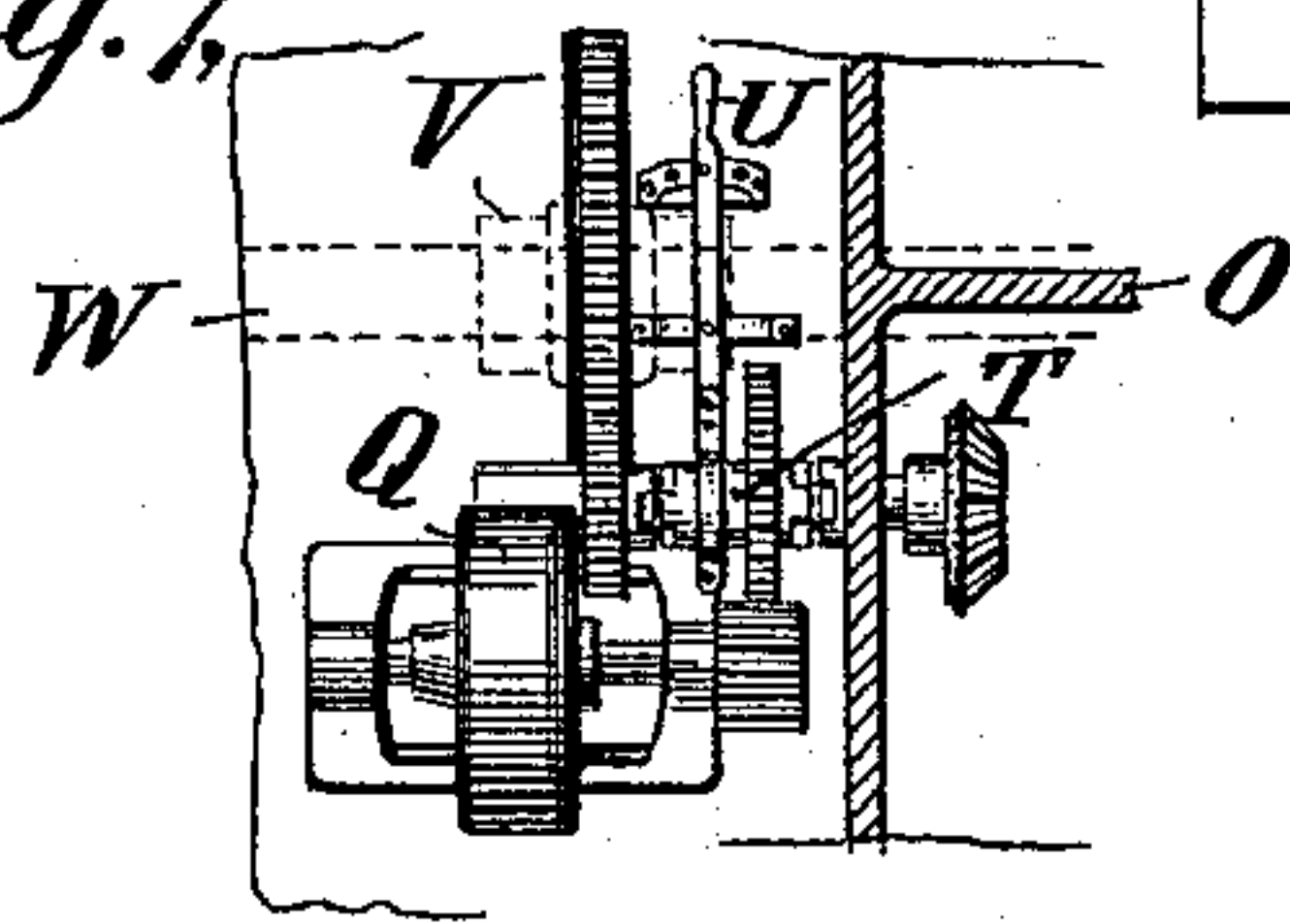


Fig. 7,



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4 Sheets—Sheet 3.

Fig. 3,

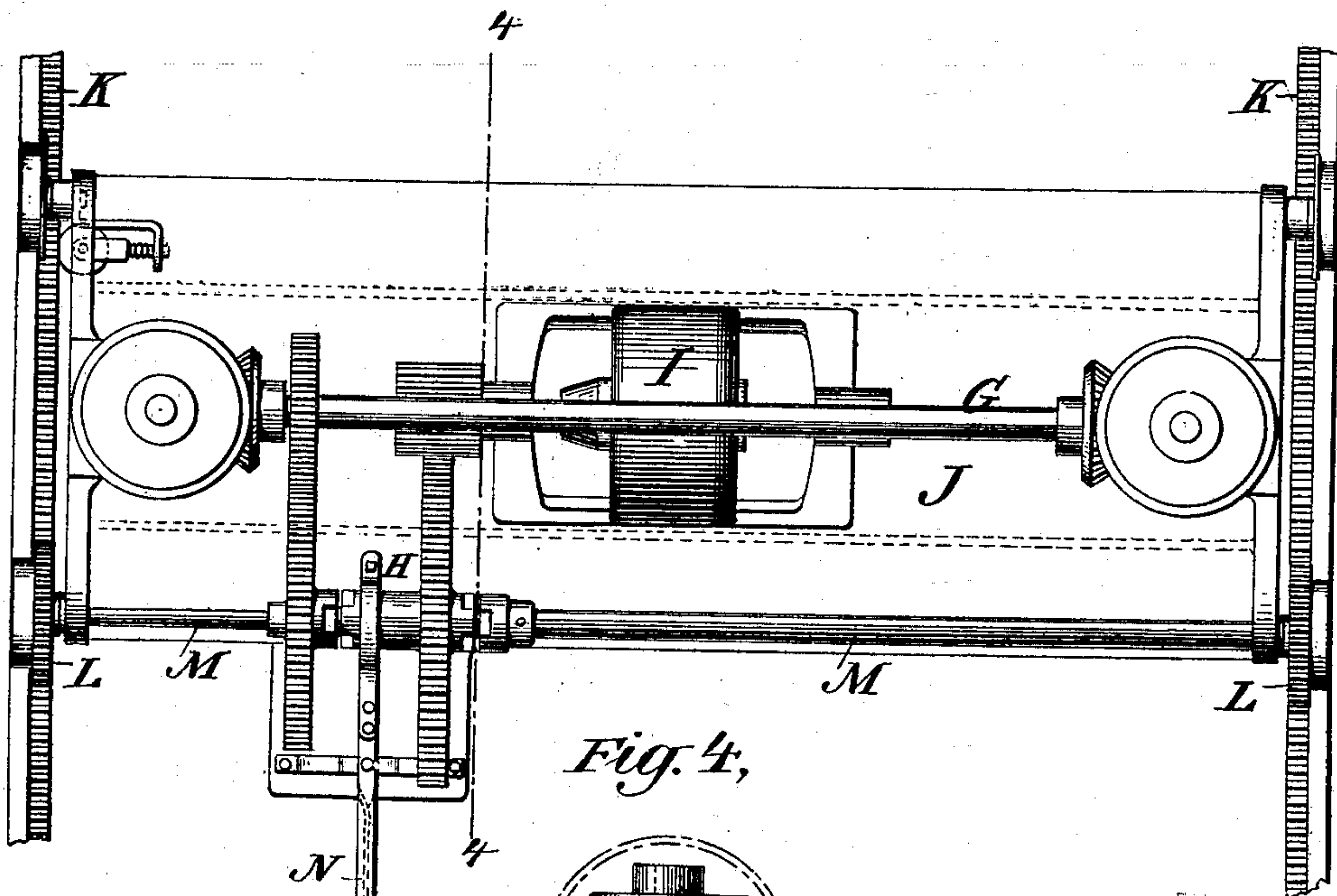


Fig. 4,

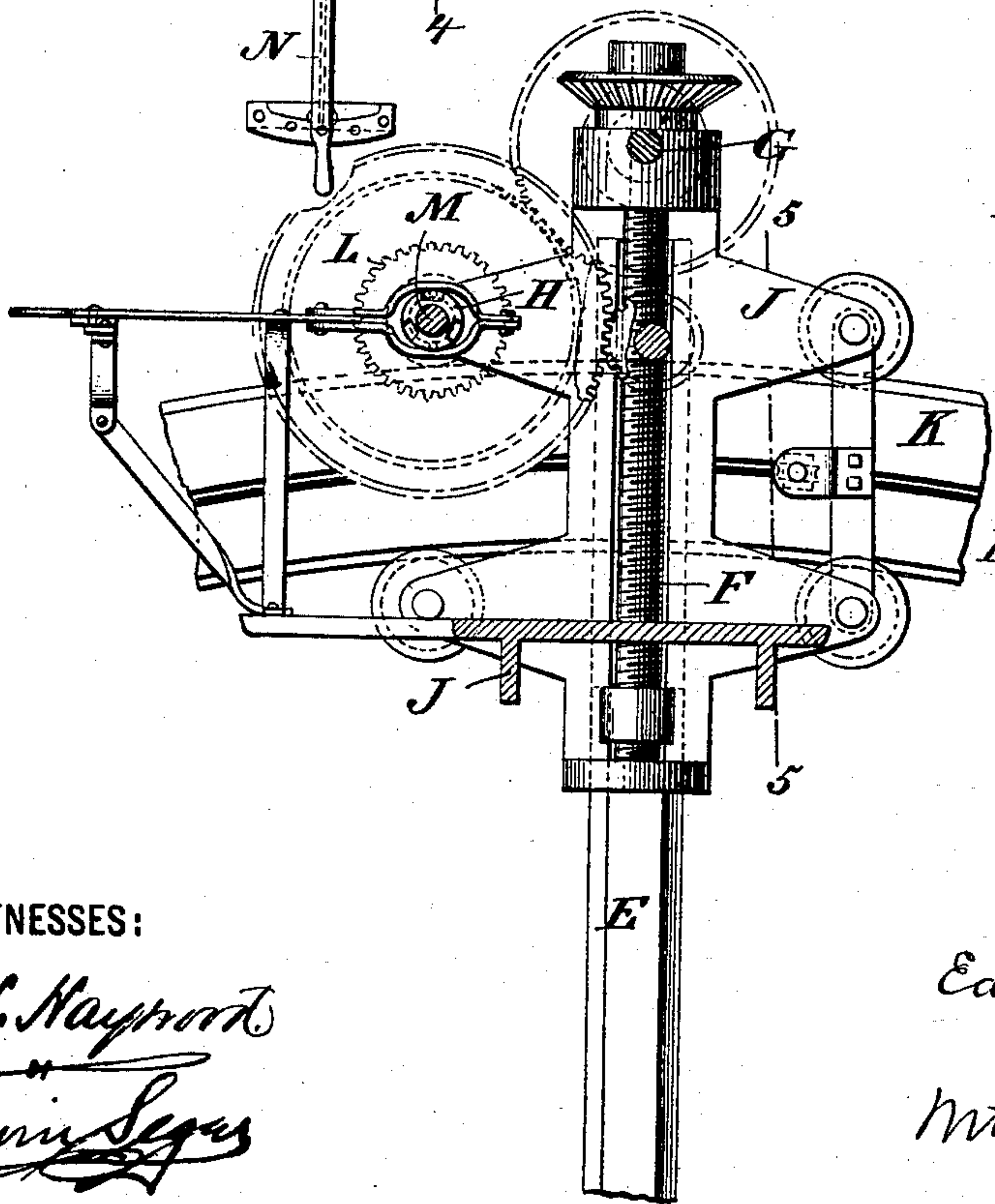
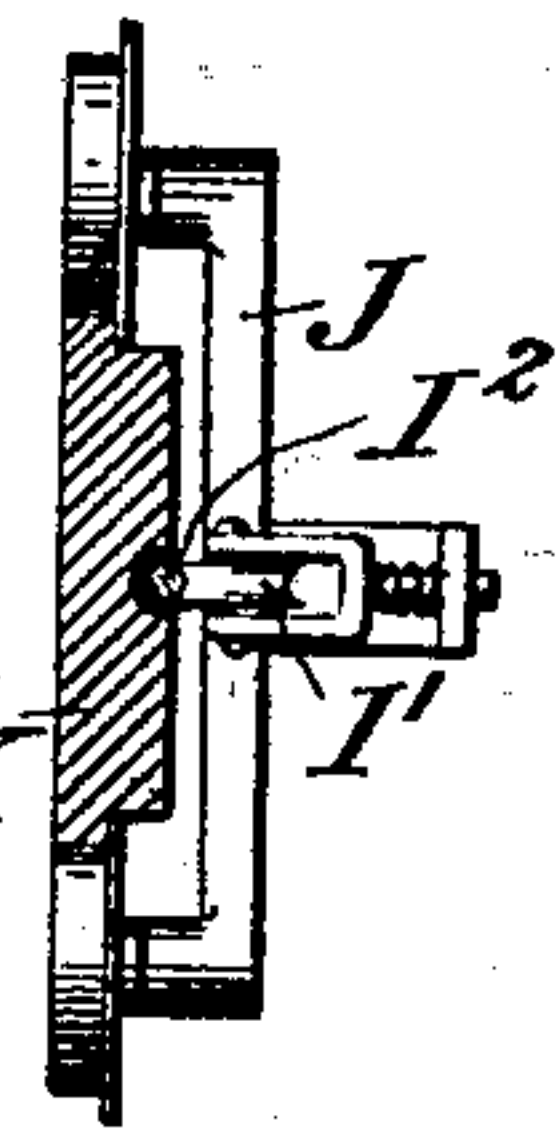


Fig. 5,



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No. 637,580.

Patented Nov. 21, 1899.

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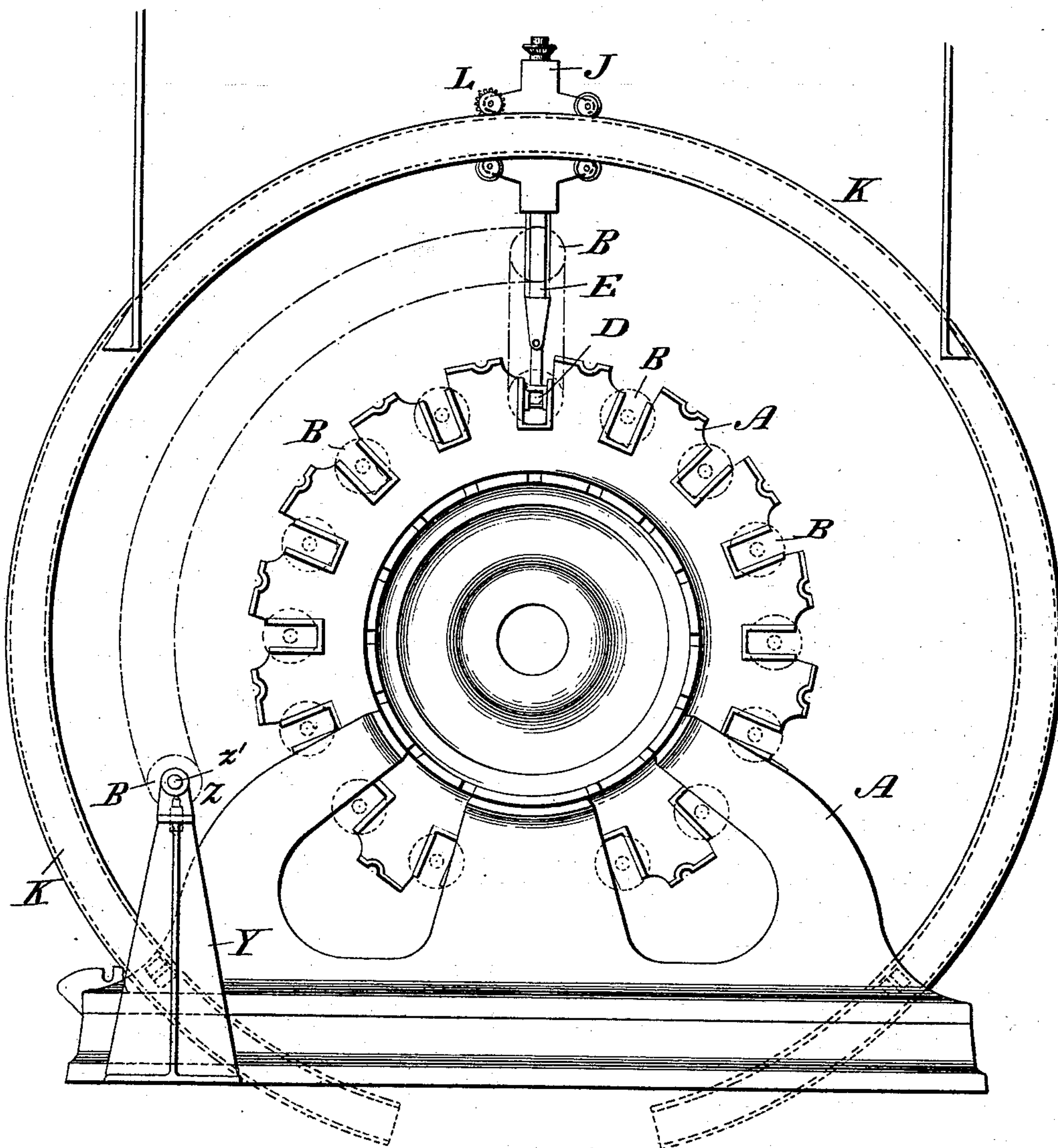
APPARATUS FOR HANDLING PRINTERS' CYLINDERS OR TUBES.

(Application filed Feb. 11, 1898. Renewed July 12, 1898.)

(No Model.)

4 Sheets—Sheet 4.

Fig. 6,



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

APPARATUS FOR HANDLING PRINTERS' CYLINDERS OR TUBES.

SPECIFICATION forming part of Letters Patent No. 637,580, dated November 21, 1899.

Application filed February 11, 1896. Renewed July 12, 1898. Serial No. 685,766. (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, Staten Island,) county of Richmond, State of New York, have invented a certain new and useful Improvement in Apparatus for Handling Printing Cylinders and Tubes, of which the following is a specification.

10 The invention has reference to printing and transfer presses having printing-cylinders or printing-surfaces. In its preferred form it has especial reference to presses in which the printing surface or form or the support there-
15 for is a hollow cylinder or tubular covering or shell which for use is slipped onto the permanent shaft of the machine and is fixed to the same, revolving in use with said permanent shaft, and has special reference to presses
20 in which there is a plurality of such printing-surfaces—as, for example, in multicolor-presses.

The invention is in the nature of an adjunct or adjuncts to such presses, and has for its
25 object the ready and convenient handling of such printing cylinders or surfaces or such tubular printing or lithographic surfaces or such tubular form-cylinders and the introduction of the same into and the removal of
30 the same from operative position in the press.

The invention is in the nature of an improvement upon the invention set out and claimed in a pending application of mine, filed
June 13 1895, Serial No. 552,641, and renewed
35 July 12, 1898, Serial No. 685,764; and it consists of the devices herein shown and claimed.

In the accompanying drawings, which form a part hereof, Figure 1 is a side view of an apparatus embodying all of the features of my
40 invention. Fig. 2 is a sectional view of the same, certain parts being removed. Fig. 3 is an enlarged plan view of a part of the same. Fig. 4 is a section on the line 4 4 of Fig. 3. Fig. 5 is a sectional view on the line 5 5 of
45 Fig. 4. Fig. 6 is a diagrammatic side view of a modified form of apparatus embodying some of the features of my invention. Fig. 7 is a plan view of a detail of Fig. 2.

In the preferred embodiment of my invention shown in the drawings herein I have
50 shown the printing surface or form or the support therefor as a hollow cylinder or tubular

covering or shell which for use is slipped onto the permanent shaft of the machine and is fixed to the same, revolving in use with said
55 permanent shaft. My invention in its broad features is, however, not confined to the use of such hollow printing surfaces or forms or supports, but may be employed with other printing-surfaces—such, for example, as solid
60 printing-cylinders. Again, my invention is shown, in the embodiment of it set forth in the drawings, in connection with a multicolor-press, although it is evident that it can be employed in any press in which printing-sur-
65 faces are to be inserted, removed, or replaced.

Referring to the specific forms of apparatus shown in the drawings, A indicates the frame of a multicolor-press capable of simultaneously printing fifteen different colors—such,
70 for instance, as is shown in my application, Serial No. 518,015, filed July 19, 1894, and renewed May 27, 1899, Serial No. 718,570. B B indicate the several printing tubes or surfaces in position in the press. Each print-
75 ing-tube has in the usual way its group of inking and dampening devices, which are indicated in one instance in the drawings—namely, at C—and which in any proper man-
80 ner may be swung out of the way of the printing-tube, enabling the same to be moved outward radially from its mountings in the press. D represents a shaft carrying a form-
cylinder and printing-tube. In practice the printing-tube is a thin hollow external shell
85 carried by the form-cylinder, and the form-cylinder is a more substantial but hollow shell carried by the shaft D, the printing-tube being removable from the form-cylinder and the form-cylinder being removable from
90 the shaft. E E are two hoisting-arms, which are raised and lowered by two screw-shafts F F, which are simultaneously driven by the shaft G, which latter is driven through the clutch H by the electric motor I. These parts
95 are solidly framed together, and the frame or carriage J is carried by means of four axles and eight wheels (or equivalent grasping and rolling or sliding devices) on the circular rails K K. One set, L, of these wheels preferably have
100 gear-teeth (which in such case take into gear-teeth on the rails K K) and are driven through their common shaft M and the clutch H by the motor I. The eight wheels of the frame

or carriage are flanged and snugly fit the flanges of the rails K K, as shown in Fig. 5. This frame J through the wheels described so snugly and firmly grips the rails K K that it presents the hoisting-arms E E radially toward the press in whatever position the frame J may chance to be on the rails K K, whereby the raising and lowering of the hoisting-arms E is a radial motion from and toward the center of the axis of the press in all positions of the frame and irrespective of the weight carried by those hoisting-arms. The clutch H is a double clutch, as shown—that is to say, it is a loose sleeve on the shaft M, having a clutch construction at each end. This sleeve or clutch is at one end adapted to clutch a collar that is keyed onto the shaft M, and is at the other end adapted to clutch a loose sleeve carrying a gear-wheel meshing with a gear-wheel on the shaft G. The clutch H is constructed so that it cannot simultaneously clutch at both ends—that is to say, so that it cannot simultaneously drive the shaft M and the shaft G. The clutch H carries a gear-wheel, by which it is driven, said gear-wheel to that end meshing with a gear-wheel on the shaft of the motor I. The clutch H is shifted by the handle N. Shifting it in one direction will transfer the motion of the electric motor to the shaft G and the screw-threaded shafts F F and so raise or lower the hoisting-arms E E, depending upon the direction of rotation of the motor, which can be controlled in any suitable way. Shifting the clutch H in the other direction will transfer the motion of the motor to the shaft M and cog-wheels L, which will cause the entire frame J, with all the hoisting apparatus that it carries, to travel around on the rails K K. The direction of this motion may be controlled through the motor I. Fig. 5 illustrates a convenient means of conveying current to the motor I—namely, by a trolley-wheel I' running upon a conductor I², the trolley-wheel being suitably connected to the motor and the conductor to the source of current, the return-circuit being similarly or suitably provided for. These electrical connections may be of any ordinary construction and are not shown in the drawings. The rails K K are firmly mounted in any suitable way, as by brackets connecting them with the frame of the machine below and with the ceiling above. The hoisting-arms E E are jointed at their lower ends and are there constructed substantially as described in my said former application, Serial No. 552,641, filed June 13, 1895, and renewed July 12, 1898, Serial No. 685,764, and are adapted to grasp the shaft D and, when it is properly loosened from its mountings in the press, to raise it radially outward with all the parts that it carries. Those details need not here be further enlarged upon other than to say that, as shown in the drawings, there is a pin to lock the lower hinged portion of those arms in their lowered position and that at the extreme lower ends of the arms there are a fork

and pin, Fig. 1, adapted to take around the shaft and to be locked thereon and unlocked and removed therefrom as required.

By the above-described means any printing-cylinder or hollow printing tube or support therefor can be placed in proper position to be grasped by the hoisting-arms of the carriage and be raised and be carried by the carriage and be inserted in its operative position in the press or can be removed therefrom and be carried by the carriage to any desired position, whence it can be removed in any suitable manner or by any suitable means. In practice I prefer to remove the hollow printing tubes or forms or supports therefor from the hoisting-arms of the carriage or to place them therein by mechanism which I will now proceed to describe.

O is the standard of a revoluble printing-tube holder. This standard is mounted on a base P in a slideway in the same, and means are provided, as shown, for moving the standard in the slideway of the base toward and from the press, the standard being mounted, as shown, at the side of the press. The electric motor Q furnishes the power for moving the standard O in the base P.

R is a revoluble circular frame carried by the standard O, upon which it revolves, and carrying a series of receiving-shafts S, of which only two are shown in Fig. 2. The motor Q through proper connecting mechanism revolves the frame R upon the standard O and with it the receiving-shafts S, as desired. Each receiving-shaft S has at its end which is presented toward the printing-press suitable clutching mechanism adapted to be firmly clutched to one of the permanent shafts D of the press at one end of the same when said permanent shaft D is in its raised or outwardly-moved position, so that at such time the two shafts D and S are united end to end and form one straight shaft. In the drawings the receiving-shafts S are represented as carrying removable printing-tube holders X, the latter being such as are described in the pending application, Serial No. 552,641, heretofore referred to. The revoluble printing-tube holder has, preferably, one more receiving-shaft than there are permanent shafts D in the printing-press. The double clutch T, (similar in construction to the clutch H heretofore described,) operated by handle U, determines whether the power of motor Q shall be transmitted through the chain of beveled gear-wheels to the revoluble holder R to revolve the same or through the gear-wheels and traveling screw-threaded hub V, traveling on the screw-shaft W, to the standard O, in which the hub V is mounted, to reciprocate said standard toward or from the press.

In the operation of the preferred form of my improved devices shown in the drawings the new printing-tubes that it is desired to mount upon the printing-press are first mounted upon the several receiving-shafts S of the revoluble printing-tube holder. The

latter is then moved into proper position toward the press, at the side of the press, the hoisting apparatus is brought into proper position on the rails and hoists the permanent shafts D of the press in succession outwardly in radial lines to proper position to clutch with the proper receiving-shafts S, when the printing-tubes may be slipped from the latter onto the former and the shafts D lowered into place in the press. It will be understood that upon clutching a shaft S to a shaft D one of the raising-arms E, which is nearest to the shaft S, is unlocked from the shaft D and its lower part swung up out of the way, without which the printing-tube could not be slipped on or off. In an entirely similar way printing-tubes are removed from the various form-cylinders of the press and slipped off onto the receiving-shafts S. Fig. 2 represents the revoluble holder as in place and the parts as ready to raise the shaft D (with the printing-tube B upon it) outward radially to the point where it will lie in the same line axially as the receiving-shaft S, the latter being adapted to be then clutched to D and so as to practically continue D. When it is desired that only the printing-tubes should be moved, the permanent shafts D retain the form-cylinders upon them and the receiving-shafts S carry printing-tube holders X; but when it is desired, for instance, to remove a form-cylinder from the shaft D then in that case the receiving-shaft S does not have a printing-tube holder X. The standard O or the parts on which it is mounted and carried may be mounted on a proper turn-table, if desired, permitting the entire revoluble printing-tube holder, with its series of receiving-shafts S, to be turned angularly away from the printing-press. In such case proper locking mechanism should be provided to lock the parts in proper position when operatively presented to the printing-press.

It is evident that many changes might be made in the form and proportion of the parts without departing from my invention. For instance, Fig. 6 shows, diagrammatically, a modified form of apparatus in which the features of my invention which are found in the hoisting and carrying parts are combined with the standard Y, head Z, and receiving-shaft Z' of my applications Serial Nos. 552,641 and 685,764. The hoisting apparatus in this case first hoists the shaft carrying the printing-tube, then carries it around to the receiving-shaft Z', (where the printing-tube is transferred from one to the other,) and then returns the shaft to its place in the press.

It is of course evident that the revoluble printing-tube holder is adapted for use only with hollow printing tubes or forms or supports and cannot be used, for example, with solid printing-cylinders. When the latter are used, any other suitable means may be employed for bringing the printing-cylinders to or removing them from the hoisting-arms

of the carriage, or they may be brought or removed by hand.

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

1. In combination with suitable hoisting-arms and means for operating the same, a suitable frame or carriage and a set of circular rails and means for moving and positively holding at any point the carriage on the rails, substantially as set forth.

2. In combination with suitable hoisting-arms and means for operating the same, a frame or carriage having grasping and rolling or sliding devices, one set of which are gear-wheels L, and a set of rack-rails, the racks of which mesh with the gear-wheels of the carriage, and means for rotating the said gear-wheels, substantially as described.

3. In combination with suitable hoisting-arms and means for operating the same, a frame or carriage having grasping and rolling or sliding devices, one set of which are gear-wheels L, and a set of circular rack-rails, the racks of which mesh with the gear-wheels of the carriage, and means for rotating the said gear-wheels, substantially as described.

4. The combination, substantially as described, of suitable hoisting-arms, a frame or carriage carrying the same having grasping and rolling or sliding devices, one set of which are gear-wheels, a set of rack-rails the racks of which mesh with the gear-wheels of the carriage, and a motor I and clutch H, and connecting parts, whereby the hoisting-arms and the gear-wheels are driven but dissimultaneously.

5. The combination, with a printing-press having a series circularly arranged of hollow printing forms or surfaces carried on permanent shafts, of suitable hoisting-arms and means for operating the same, a suitable frame or carriage for the hoisting-arms, a set of circular rails concentric with the press for the carriage to move on, and means for moving the carriage on the rails, substantially as described.

6. The combination, with a multicolor-printing press having a series circularly arranged of hollow printing forms or surfaces carried on permanent shafts, and with suitable hoisting-arms and means for operating the same, a suitable frame or carriage for the hoisting-arms, a set of circular rails concentric with the press for the carriage to move on, and means for moving the carriage on the rails, of a revoluble printing-tube holder concentric with the rails and having a series of receiving-shafts each adapted to lock with and so as to continue a permanent shaft of the press when such shaft is grasped and moved outward radially by the hoisting-arms, and mechanism to revolve the said holder, substantially as described.

7. The combination with suitable hoisting-arms and means for operating the same, a suitable carriage and a set of circular rails and means for moving the carriage on the

rails, of a revoluble printing-tube holder concentric with the rails and having a series of receiving-shafts each adapted to lock with and so as to continue a permanent shaft of a press when such shaft is grasped and moved outward radially by the hoisting-arms, and mechanism to revolve the said holder, substantially as described.

8. A revoluble printing-tube holder having a standard and a series of receiving-shafts, each adapted to lock with and so as to continue the permanent shaft of a press, and mechanism to revolve the same, substantially as described.

9. A revoluble printing-tube holder having a base and standard, the standard being movable horizontally in the base, and a series of receiving-shafts each adapted to lock with and so as to continue the permanent shaft of a press, and mechanism to revolve the same and mechanism to move the standard in the base, substantially as described.

10. A revoluble printing-tube holder having a base and standard, the standard being movable horizontally in the base, and a series of receiving-shafts each adapted to lock with and so as to continue the permanent shaft of a press, and the motor Q and clutch T and connected trains of mechanism, whereby the holder is revolved and its standard is moved to and fro horizontally in its base, but these operations are dissimultaneous.

11. In combination with suitable hoisting-arms and means for operating the same, a frame or carriage having grasping and rolling or sliding devices, a set of circular rails and means for actuating the grasping and rolling or sliding devices for moving the carriage and for positively holding it at any point on the rails, whereby printing-cylinders, tubes or supports therefor may be removed from operative position in the press and be carried to any desired position or may be carried from such position to and be inserted in, their operative positions in the press.

12. The combination in a press of suitable hoisting-arms, means for operating the arms, a frame or carriage carrying the same having grasping and rolling or sliding devices, a set of circular rails, a motor for actuating the means for operating the hoisting-arms and also the grasping and rolling or sliding devices to cause the carriage to move along the rails, and a clutch adapted to connect the motor so as to operate either the hoisting-arms or to move the carriage or to wholly disconnect it, whereby the carriage may be moved and the hoisting-arms be operated at will but dissimultaneously and whereby printing-cylinders, tubes or supports therefor may be removed from operative position in the press and be carried to any desired position or may be carried from such position to and be inserted in, their operative positions in the press.

13. The combination in a printing-press adapted to have a series, circularly arranged, of printing-cylinders, of suitable hoisting-

arms and means for operating the same, a suitable frame or carriage for the hoisting-arms, a set of circular rails concentric with the press for the carriage to move on and means for moving the carriage on the rails, whereby printing-cylinders, tubes or supports therefor, may be removed from operative position in the press and be carried to any desired position or may be carried from such position to and be inserted in, their operative positions in the press.

14. The combination in a printing-press adapted to have a series, circularly arranged, of printing-cylinders, of suitable hoisting-arms and means for operating the same, a suitable frame or carriage for the hoisting-arms, a set of circular rails concentric with the press for the carriage to move on and means for moving the carriage on the rails and for positively holding it at any point thereon, whereby printing-cylinders, tubes or supports therefor, may be removed from operative position in the press and be carried to any desired position or may be carried from such position to and be inserted in, their operative positions in the press.

15. The combination in a printing-press adapted to have a series, circularly arranged, of printing-cylinders, of suitable hoisting-arms, means for operating the arms a suitable frame or carriage carrying the same and having grasping or rolling or sliding devices, a set of circular rails concentric with the press for the carriage to move upon, a motor for actuating the means for operating the hoisting-arms and also the grasping or rolling or sliding devices to cause the carriage to move along the rails and a clutch adapted to connect the motor so as to operate either the hoisting-arms or to move the carriage or to wholly disconnect the motor, whereby the carriage may be moved and the hoisting-arms be operated at will but dissimultaneously and whereby any of the printing-cylinders tubes or supports therefor may be removed from operative position in the press and be carried to any desired position or may be carried from such position to and be inserted in, their operative positions in the press.

16. The combination in a printing-press adapted to have a series, circularly arranged, of printing-cylinders, of suitable hoisting-arms, means for operating the arms, a suitable frame or carriage carrying the same and having grasping and rolling or sliding devices, a set of circular rails concentric with the press for the carriage to move upon, a motor for actuating the means for operating the hoisting-arms and also the grasping or rolling or sliding devices to cause the carriage to move along the rails and to be positively held at any desired position upon the rails, and a clutch adapted to connect the motor so as to operate either the hoisting-arms or to move the carriage or to wholly disconnect the motor, whereby the carriage may be moved, and the hoisting-arms be operated at will but

5 dissimultaneously and whereby any of the
printing-cylinders, tubes or supports therefor
may be removed from operative position in
the press and be carried to any desired posi-
tion or may be carried from such position to
and be inserted in, their operative positions
in the press.

10 17. The combination in a printing-press
adapted to have a series, circularly arranged,
of printing-cylinders, of suitable hoisting-
arms, means for operating the arms, a suit-
able frame or carriage carrying the same and
having grasping and rolling or sliding devices,
a set of circular rails concentric with the press
15 for the carriage to move upon, a motor mount-
ed upon the carriage for actuating the means
for operating the hoisting-arms and also the
grasping and rolling or sliding devices to cause
the carriage to move along the rails and to be
20 positively held at any desired position upon
the rails, trains of gearing connecting the
motor with the means for operating the hoist-

ing-arms and with the grasping and rolling
or sliding devices and a clutch mounted upon
the carriage adapted to connect the motor so 25
as to operate either the hoisting-arms or to
move the carriage or to wholly disconnect the
motor, whereby the carriage may be moved
and the hoisting-arms be operated at will but
dissimultaneously and whereby any of the 30
printing-cylinders, tubes or supports there-
for may be removed from operative position
in the press and be carried to any desired
position or may be carried from such position
to and be inserted in, their operative posi- 35
tions in the press.

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

EDWARD HETT.

Witnesses:

GEO. W. MILLS, Jr.,
EDWARD SEGER.