

No. 742,691.

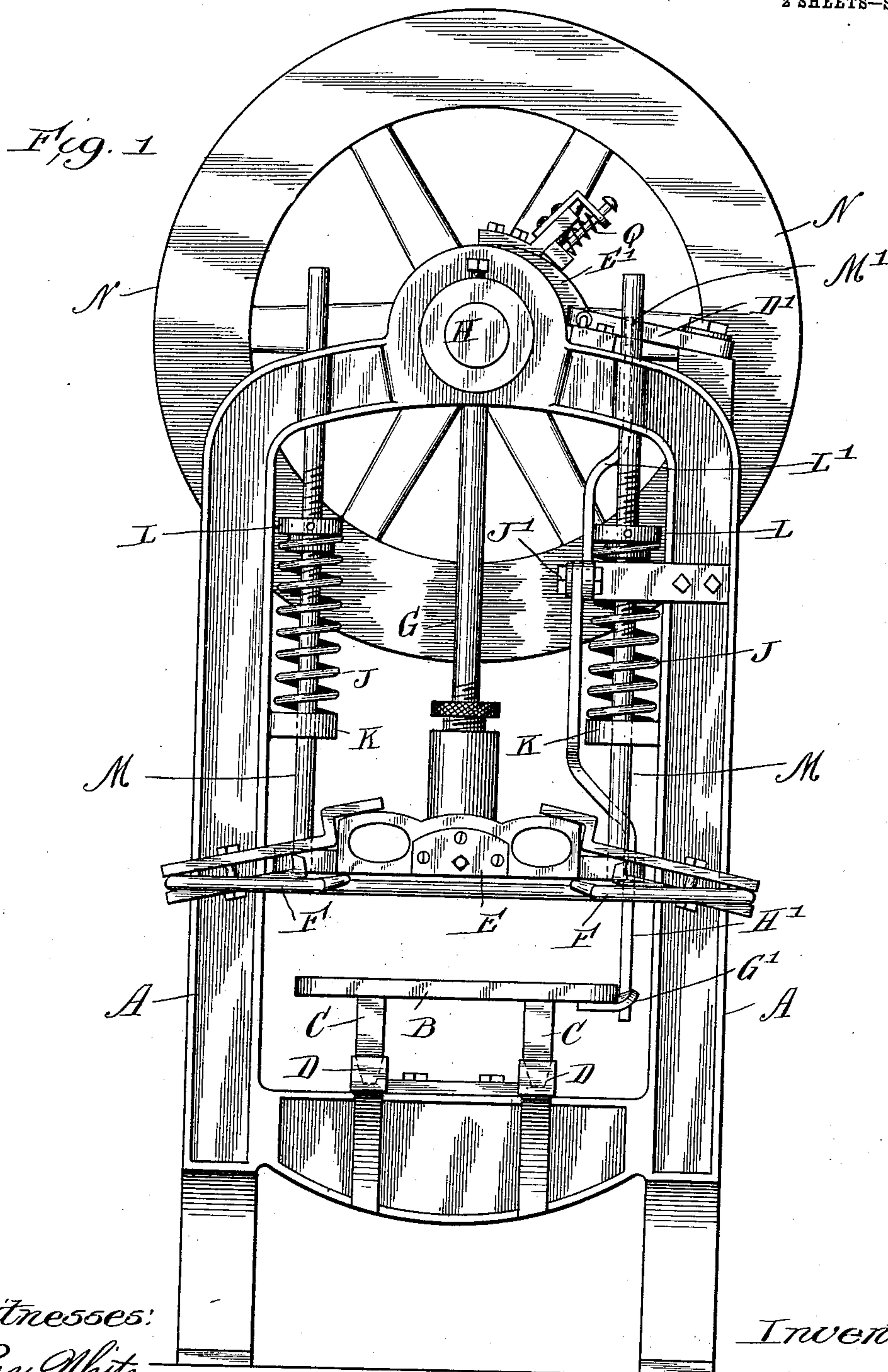
PATENTED OCT. 27, 1903.

W. H. LUM.  
TIP PRINTING PRESS AND EMBOSsing MACHINE.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:  
Ray White,  
Harry White

Inventor  
Walter H. Lum  
By Brown & Darby Attys.

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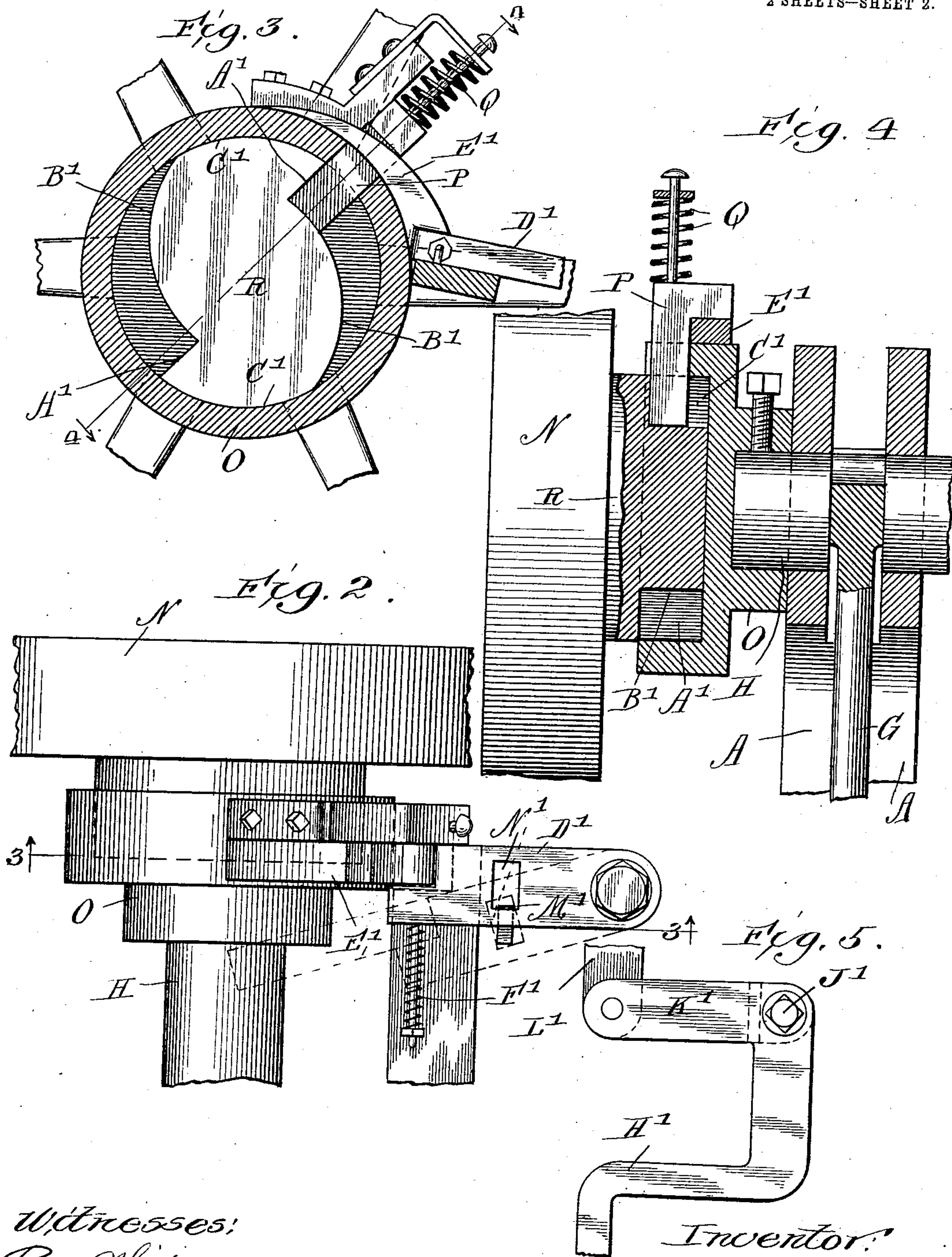
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# UNITED STATES PATENT OFFICE.

WALTER H. LUM, OF CHICAGO, ILLINOIS.

## TIP-PRINTING PRESS AND EMBOSSING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 742,691, dated October 27, 1903.

Application filed February 24, 1903. Serial No. 144,838. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER H. LUM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Tip-Printing Press and Embossing-Machine, of which the following is a specification.

This invention relates to tip-printing presses and embossing-machines.

The object of the invention is to simplify and improve the construction of presses for applying metal-leaf lettering, designs, &c., to book-covers and the like and to render the same more efficient in operation.

A further object of the invention is to provide power mechanism in a tip-printing press for operating the head, in combination with means for automatically throwing such mechanism into and out of operation.

Other objects of the invention will appear more fully hereinafter.

The invention consists, substantially, in the construction, combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a view in front elevation of a tip-printing press embodying in its construction the principles of my invention. Fig. 2 is a top plan view of the same, parts broken off. Fig. 3 is a broken detail view in section on the line 3 3 of Fig. 2 looking in the direction of the arrows. Fig. 4 is a broken detail view in section on the line 4 4, Fig. 3, looking in the direction of the arrows. Fig. 5 is a broken detail view showing a form of connection embodying the principles of my invention for automatically engaging the power driving mechanism through which the head of the press is operated.

Referring to the accompanying drawings, reference-sign A designates a suitable framework upon which the parts of the machine are mounted. Upon this framework is mounted a table or platen B, upon which the work is supported during the printing operation. This table or platen may be of the usual or any well-known or convenient construction and arrangement. In the particular form

shown a table or platen is provided having legs or guides C, operating on tracks D, mounted on the framework of the machine, whereby said table or platen may be shifted by hand or otherwise into and out of position to be brought under the head. The head is designated by reference-sign E and may be of the usual or any suitable or convenient construction and arrangement and provided with the gas-jets F or other suitable means for heating the same in the ordinary manner. This head is mounted to reciprocate vertically in the usual way in side guides formed in the framework and is adjustably mounted upon a pitman G in any convenient manner, the latter being mounted upon and operated from an eccentric formed on the main drive-shaft H. The movement of the head downwardly or toward the surface of the table or platen B may be yieldingly opposed in any suitable or convenient manner—as, for instance, by means of springs J, bearing at one end upon lugs K and at the other end against collars L, mounted upon rods M, suitably connected to the head. Any other suitable or convenient arrangement may be employed for accomplishing this purpose.

In the specific construction and arrangement thereof the parts so far described form no part of my present invention except in their coöperative combination and except in the feature of the drive-shaft H and the eccentric or crank connection for operating the head therefrom.

In machines of this character as heretofore constructed and used the head has been operated by hand. This not only involves additional labor in effecting the proper operation of the head, but is also slow and tedious, involving waste and loss of time. It is among the special objects of my present invention to avoid this objection and to provide means for driving through power mechanism the shaft from which the head is actuated, and it is also desirable that the action of the power driving mechanism be steady and uniform in its operation, and my invention includes means for securing this result.

In carrying out my invention I propose to drive the main power-shaft H through a weighted or heavy drive-pulley N from any suitable or convenient source of power, said



pulley not only serving as a drive-pulley, but also as a counterbalancing-pulley, thereby enabling me to secure even steady uniform work, and I propose to connect the counterbalancing driving-pulley with the main drive-shaft H through a clutch connection, whereby while the counterbalancing drive-pulley may be continuously rotated the head-operating shaft is connected to rotate with such pulley only when required or desired. Any suitable or convenient form of clutch mechanism for accomplishing this result may answer the purpose, and while I have shown and will now describe one form of clutch mechanism for accomplishing the desired object I do not desire to be limited or restricted thereto, as it is obvious that other forms of clutch mechanism may be equally applicable for such use. In the form shown, O designates a collar suitably secured upon to rotate with shaft H. This collar carries an L-shaped clutch-pin P, having one of its arms arranged to extend through an opening in a flange of collar O and yieldingly pressed toward the hub of drive-wheel N in any suitable manner—as, for instance, by means of a spring Q.

Suitably connected to rotate with the balancing drive-pulley N or the hub thereof is a collar R, having shoulders A', formed in the peripheral surface thereof at diagonally opposite points, and inclined or cam surfaces B', extending peripherally from the bases of such shoulders in the direction of rotation of the pulley, said inclined cam-surfaces terminating adjacent to the shoulders in cylindrical surfaces C'.

Pivotally mounted upon a convenient part of the framework is an arm D', carrying at its free end a beveled finger or extension E', arranged when said arm D' is suitably rocked to be brought into the path of the angular arm of the L-shaped clutch-pin P, as clearly shown in the drawings. The arm D' may be held or pressed normally in a direction for the beveled finger E' to be held in position for the angular extension of the clutch-pin to ride thereon in any suitable or convenient manner—as, for instance, by means of a spring F'.

From the foregoing description it will be seen that when arm D' is not otherwise influenced except by the tension of spring F' the bevel finger or extension E' thereof is carried or held over the peripheral surface of the flange of sleeve O and in the path of the angular extension of the clutch dog or pin P, thereby permitting said angular extension to ride over and upon the bevel or cam shaped surface of the finger or extension E', and hence causing the other arm of said dog to be withdrawn from engaging relation with respect to a shoulder A' of the clutch-collar R and against the action of spring Q, thereby disengaging the coupling or connection between the balancing drive-pulley N and shaft H. When, however, arm D' is rocked or swung against the action of its spring F', so as to withdraw the beveled extension or finger E'

from supporting relation with respect to the angular extension or arm of the clutch dog or pin, said clutch dog or pin is forced down by its spring Q into position to be engaged by a shoulder A' on the clutch-collar, thereby effecting a coupling of the counterbalancing drive-pulley with shaft H to drive the latter. In the efficient operation of machines of this class it is desirable to provide means for automatically engaging this clutch mechanism, and in accordance with the principles of my invention I propose to provide means whereby this clutching operation is effected automatically through the movement of the work-supporting table or platen B into position underneath the head E. Any suitable intermediate connections operated by the movement of the table or platen into this position may be employed for effecting the clutching operation. I have shown a simple and efficient arrangement for accomplishing this result, but to which I do not desire to be limited or restricted, and wherein I provide the table or platen with a lug or lateral extension G', arranged to engage the free end or arm H' of a bell-crank-shaped lever pivotally mounted, as at J', upon a convenient part of the framework, and to the other arm K' of which (see Fig. 5) is pivotally connected a link L', having a beveled upper end M' arranged to operate in a slot N' in arm D'. The arrangement of this bell-crank and link connection is such that when the table or platen B is shifted or moved into position underneath the head the lug or extension G' thereon can engage the arm H' of the bell-crank lever, thereby rocking such bell-crank lever about its pivot J', and hence causing an upward projection of link L', the engagement of the beveled upper or free end of which against the wall of slot N' causing arm M' to be rocked against the action of spring F' and in a direction to withdraw the beveled finger or extension E' from supporting relation with respect to the arm of clutch pin or dog P. Upon the return or withdrawal of table or platen B from its position beneath the head or by the time it reaches its position underneath the head the bell-crank lever and its link connection are restored to their initial or normal retracted position by gravity or otherwise, as may be desired, thereby permitting spring F' to return arm D' to its initial position, thereby carrying the beveled finger or extension E' again into the path of the clutch dog or pin, enabling the angular extension thereof to ride over and upon the surface of the beveled finger or extension E', and hence resulting in a withdrawal of such pin or dog from locking or clutching relation, and hence arresting the further action of the head. The provision of the shoulders A' on the clutch-collar insures an arrest or disengagement of the clutch, as well as the engagement thereof at certain definite points, and by providing the cam-surfaces B' on the clutch-collar it will be seen that when the clutch dog or



pin is released to effect a clutching or coupling of the parts said pin during the rotation of the drive-pulley rides upon such cam-surfaces, being guided thereby to the bottom of the shoulders A', and hence insuring an efficient coupling of the parts together and at the proper time in the operation of the machine, and the provision of the cylindrical portions or surfaces C' of the clutch-collar insures an efficient disengagement or uncoupling of the parts.

In the operation of a tip-printing press of the character above described the book-cover or other sheet, page, or article to receive the letters or design is placed upon the table or platen B, with a sheet of foil applied thereover at the point where the application is to be made. The table or platen is then advanced to a position underneath the head, such advancing movement effecting a clutching of the drive-pulley with the shaft from which the head is operated, thereby causing the heated head to be lowered upon the work, the platen carrying the letters, design, or the like and effecting the application of the foil to the design or letters, as the case may be. The head is immediately raised and the table withdrawn by hand or otherwise, the withdrawal of the table or platen or the lug or projection passing beyond the arm of the bell-crank resulting in unclutching the head-operating shaft from the drive-pulley. Another piece of work is then placed upon the table or platen, and the above operation is repeated.

Thus it will be seen that I provide an exceedingly simple construction of tip-printing press wherein the entire attention of the operator may be given to the work of placing the book-covers, articles, or the like in proper position upon the table or platen and applying thereto the leaf or foil and the removal of the finished work, the operation of the press being automatic in starting up and in stopping, and hence is enabled to accomplish the work rapidly and quickly and with a great saving of labor.

It is obvious that many variations and changes in the details of construction and arrangement would readily occur to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details shown and described; but,

Having now set forth the object and nature of my invention and a construction embodying the principles thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

1. In a tip-printing press or embossing-machine, the combination with a hand-operated work-supporting table or platen and a head, said table or platen being mounted to freely slide toward and from the path of reciprocation of the head, and independent of the movement of the head, and operating on fixed tracks or ways, a drive-shaft carrying an ec-

centric, a pitman operated by said eccentric and connected to said head for reciprocating the latter, a drive-pulley connected to said shaft for operating the same, and means operated by the movement of the table or platen into position underneath the head and serving as a stop to limit such movement for throwing the head-operating mechanism into action, as and for the purpose set forth.

2. In a tip-printing press or embossing-machine, the combination with a hand-operated work-supporting table or platen and a head, said table or platen mounted to freely slide toward and from the path of reciprocation of the head, and independent of the movement of the head, of a power-shaft carrying an eccentric, a pitman connected to such eccentric and to the head for reciprocating the latter, a drive-pulley, a clutch interposed between said power-shaft and drive-pulley, and means operated by the movement of the table or platen into position underneath the head for throwing said clutch into operation, and serving as a stop to limit such movement, as and for the purpose set forth.

3. In a tip-printing press or embossing-machine, the combination with a hand-operated work-supporting table or platen and a head, said table mounted to freely slide toward and from the path of reciprocation of the head, and independent of the movements of the head, of a power-shaft for reciprocating said head, a drive-pulley for said shaft, a clutch for detachably connecting said pulley and shaft, and means operated by the movement of the table or platen into position underneath the head, and operating as a stop to limit such movement, for automatically operating said clutch, as and for the purpose set forth.

4. In a tip-printing press or embossing-machine, the combination with tracks or ways, a sliding hand-controlled work-supporting table or platen operating thereon, and a head, of a power-shaft, means operated thereby for reciprocating said head, a drive-pulley, a clutch mechanism for coupling and uncoupling said pulley and power-shaft, and a pivoted lever operated by the movement of said table or platen for operating said clutch, said lever serving as a stop for limiting such movement, whereby the momentum of the table is transmitted to the clutch, as and for the purpose set forth.

5. In a tip-printing press or embossing-machine, the combination with tracks or ways, a work-supporting table or platen mounted to slide on said tracks or ways, and having a lug or extension, a head, a drive-shaft for reciprocating the latter toward and from said table or platen, a pulley for driving said shaft, and a clutch interposed between said pulley and shaft, of a pivoted lever for operating said clutch, one end of said lever being arranged in the path of movement of the lug or extension on said table or platen, as and for the purpose set forth.



6. In a tip-printing press or embossing-machine, a hand-controlled work-supporting table or platen, a head, said table or platen mounted to freely slide toward and from the path of reciprocation of the head, and independent of the movements of the latter, a shaft for reciprocating the head, and a drive-pulley for driving said shaft, in combination with a clutch for coupling said shaft and pulley, and including a clutch-dog, an arm, means normally operating to hold said arm in position to maintain said dog out of clutching relation, and a pivotally-mounted lever having an arm arranged to be engaged and rocked by the table when moved into position beneath the head, and connections actuated by the rocking movement of said lever for automatically withdrawing said arm from such supporting relation, as and for the purpose set forth.

7. In a tip-printing press or embossing-machine, a hand-controlled work-supporting table or platen, a head, said table or platen mounted on ways or tracks to freely slide toward and from the path of reciprocation of the head, and independent of the movement of the latter, a shaft for reciprocating said head, a drive-pulley for driving said shaft, a clutch for coupling and uncoupling said shaft and pulley, and including a clutch-collar, a clutch-dog for cooperation with said collar, means normally operating to maintain said dog in engaging relation with said collar, a support for said dog, means normally operating to hold said support in supporting relation with respect to said dog, and a pivoted lever having one end working in the path, and operated by the movement of, the table into position beneath the head for automatically withdrawing said support, as and for the purpose set forth.

8. In a tip-printing press or embossing-machine, a hand-controlled work-supporting table or platen, a head, said table or platen mounted on ways or tracks to slide toward and from the path of reciprocation of the head, and independent of the movements of the latter, a shaft for reciprocating said head toward and from said table or platen, a drive-pulley for said shaft, a clutch-collar connected to said pulley and having a shoulder and a cam-surface in the peripheral surface thereof, a clutch-dog, means normally operating to maintain said dog in position to engage said

shoulder, a supporting-arm for said dog, means normally operating to hold said supporting-arm in supporting relation with respect to said dog, and a lever in the path of and operated by the movement of the table or platen into position beneath the head for automatically withdrawing said support, as and for the purpose set forth.

9. In a tip-printing press or embossing-machine, a table or platen, a head, said table or platen mounted to slide on tracks or ways toward and from the path of reciprocation of the head, a shaft for reciprocating the head, a drive-pulley for the shaft, a clutch for coupling and uncoupling said shaft including a clutch-dog, said clutch-dog provided with a lateral arm, a supporting-arm for said clutch-dog, said supporting-arm having a beveled finger or extension, means normally operating to hold said finger or extension in the path of the angular portion of the dog, whereby said angular portion may ride over the supported beveled extension or finger, and means operated by the movement of the table or platen into position beneath the head for automatically withdrawing said supporting-arm, as and for the purpose set forth.

10. In a tip-printing press or embossing-machine, a table or platen, a head, said table or platen mounted to slide on tracks or ways toward and from the path of reciprocation of the head, a shaft for reciprocating the head, a drive-pulley for the shaft, a clutch-coupling between said shaft and pulley, including a clutch-dog, a slotted arm, means normally operating to hold said arm in supporting relation with respect to said dog to hold the same out of clutching relation, a link having a beveled end arranged to operate in the slot in said arm, a lever connected to said link, and an extension or lug on said table or platen for operating said lever when said table or platen is moved along its supporting tracks or ways into position beneath the reciprocating head, all combined and arranged as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 20th day of February, 1903, in the presence of the subscribing witnesses.

WALTER H. LUM.

Witnesses:

CHAS. H. SEEM,  
S. E. DARBY.