(No Model.) 3 Sheets—Sheet 1.

M. H. SLY.

PRINTING PRESS.

No. 443,012. Patented Dec. 16, 1890.

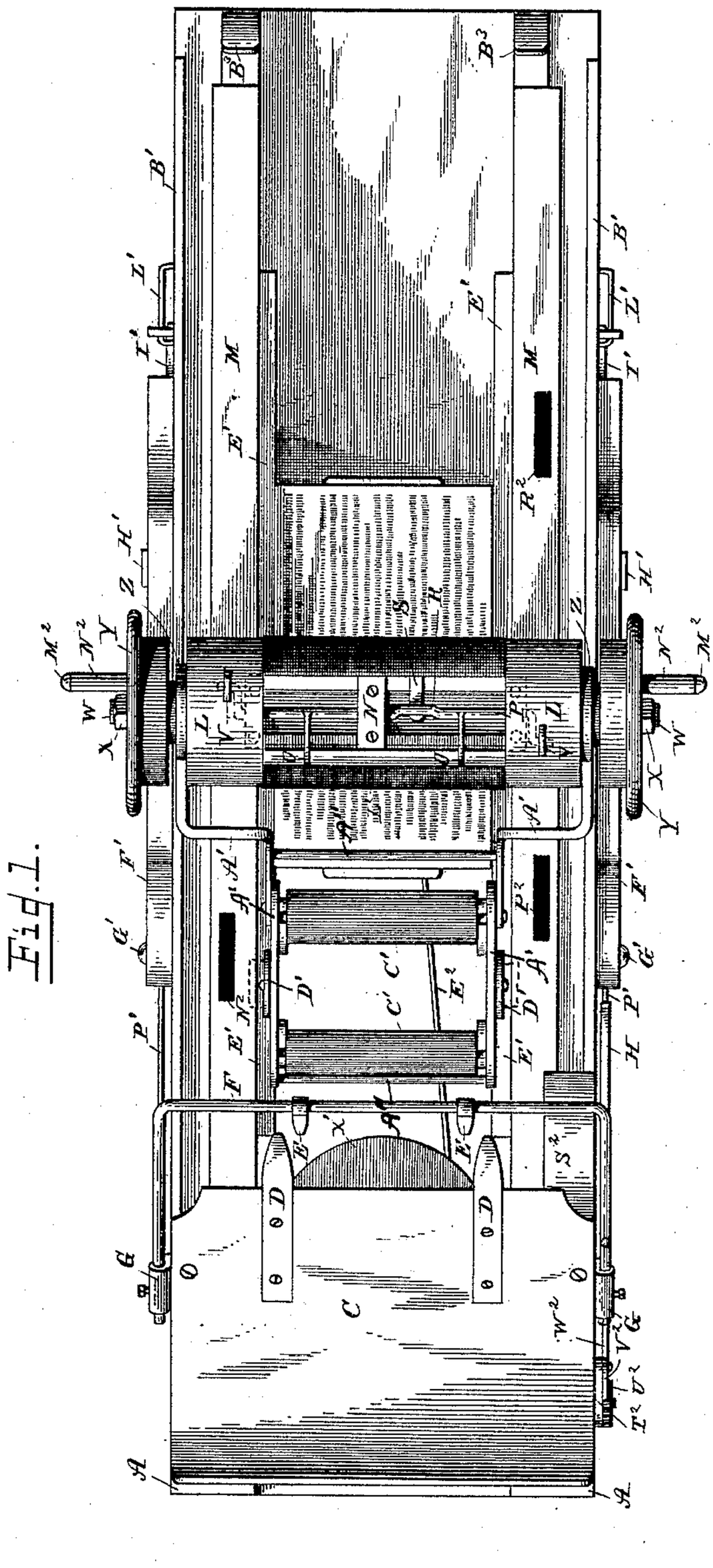


Fig. 1.

Witnesses
Edwin L. Bradford
C. D. Davis

Inventor
Morgan H. Sly
By C. M. Alexander
Attorney

(No Model.) 3 Sheets—Sheet 2.

M. H. SLY.

PRINTING PRESS.

No. 443,012. Patented Dec. 16, 1890.

Fig. 2.

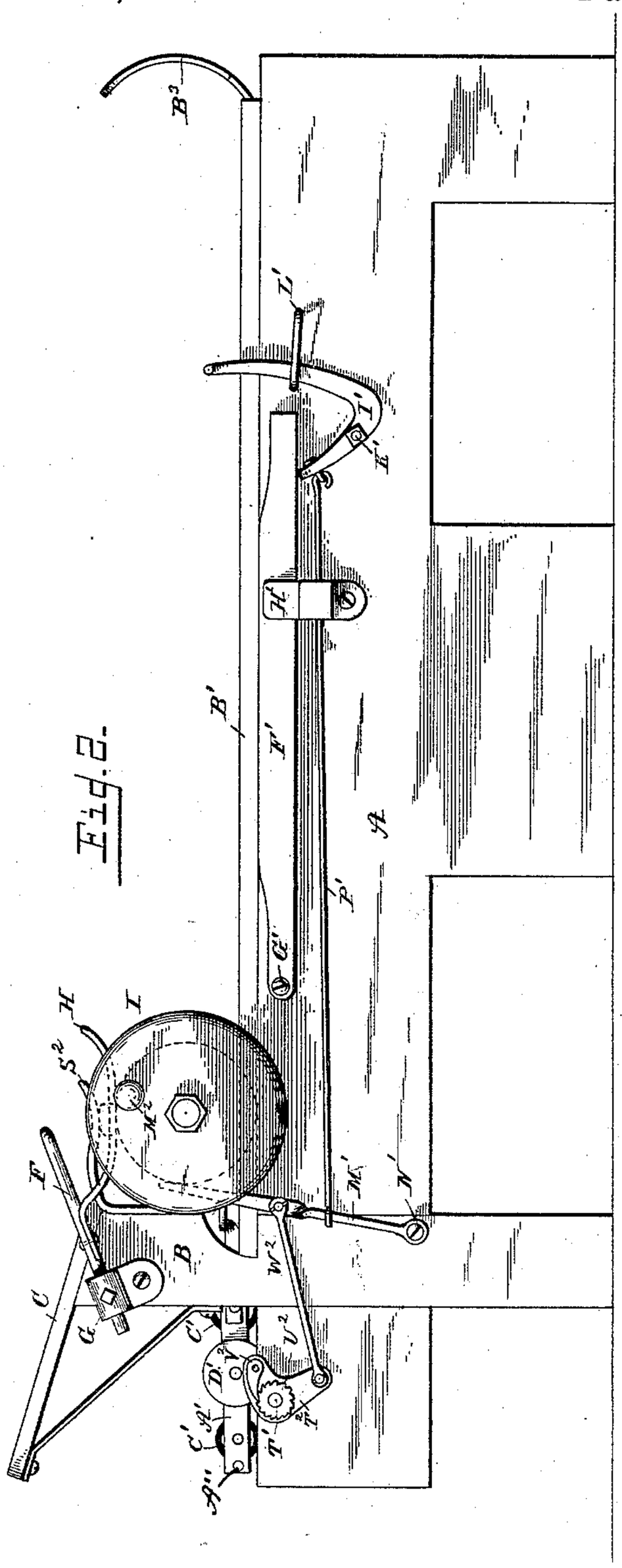
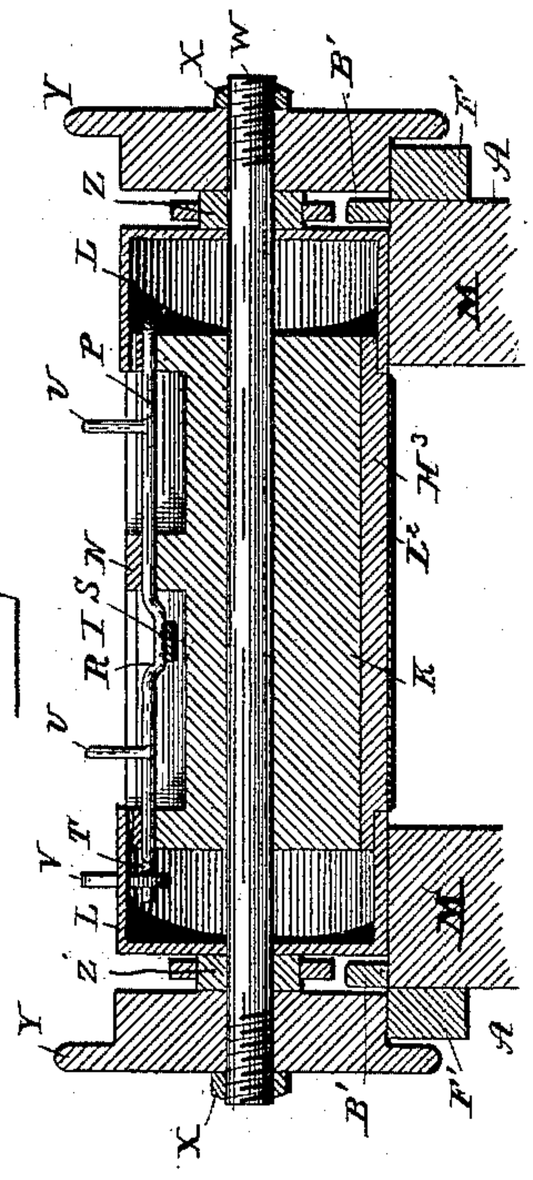


Fig. 6.



Witnesses
Edwin L. Bradford
C. D. Davis

Inventor
Morgan H. Sly
By C. M. Alexander
Attorney

(No Model.) 3 Sheets—Sheet 3.

M. H. SLY.

PRINTING PRESS.

No. 443,012. Patented Dec. 16, 1890.

Fig. 3.

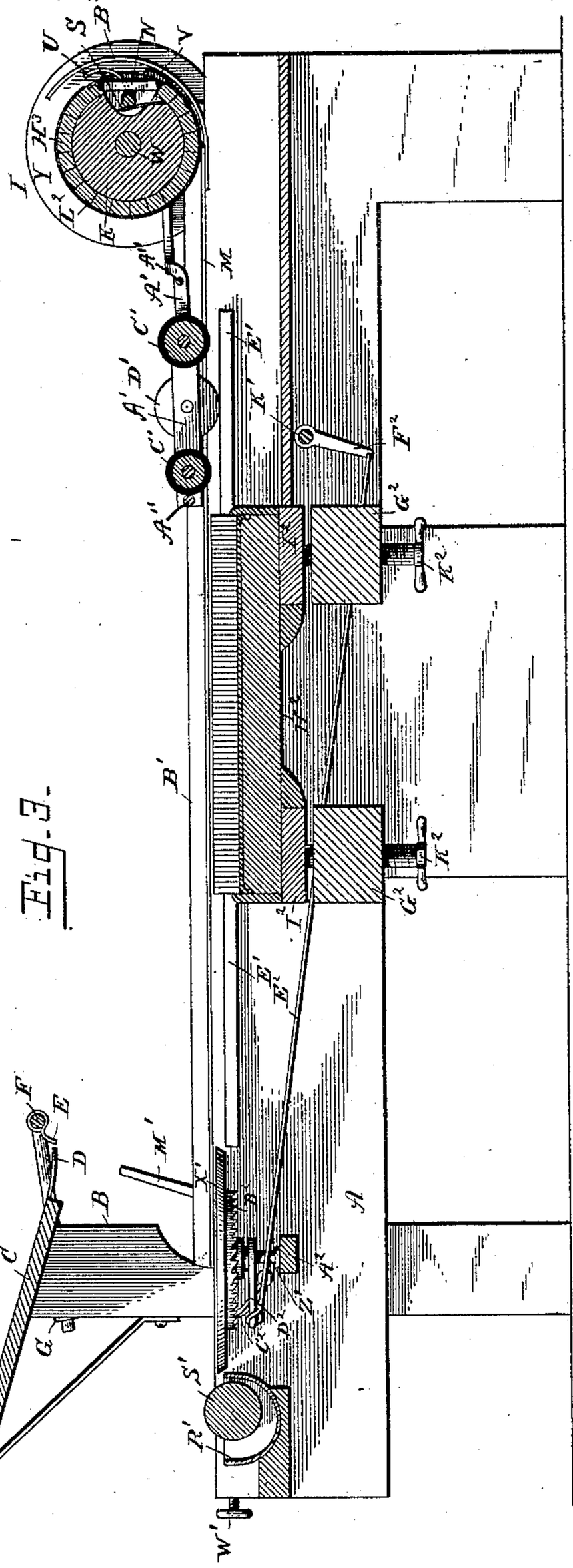


Fig. 5.

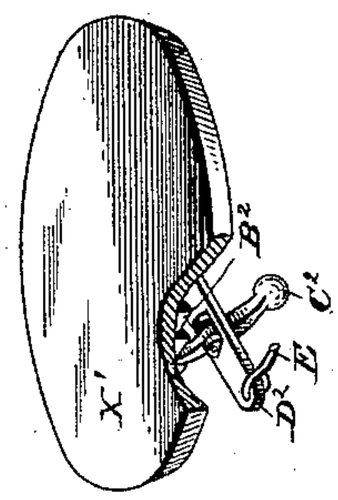
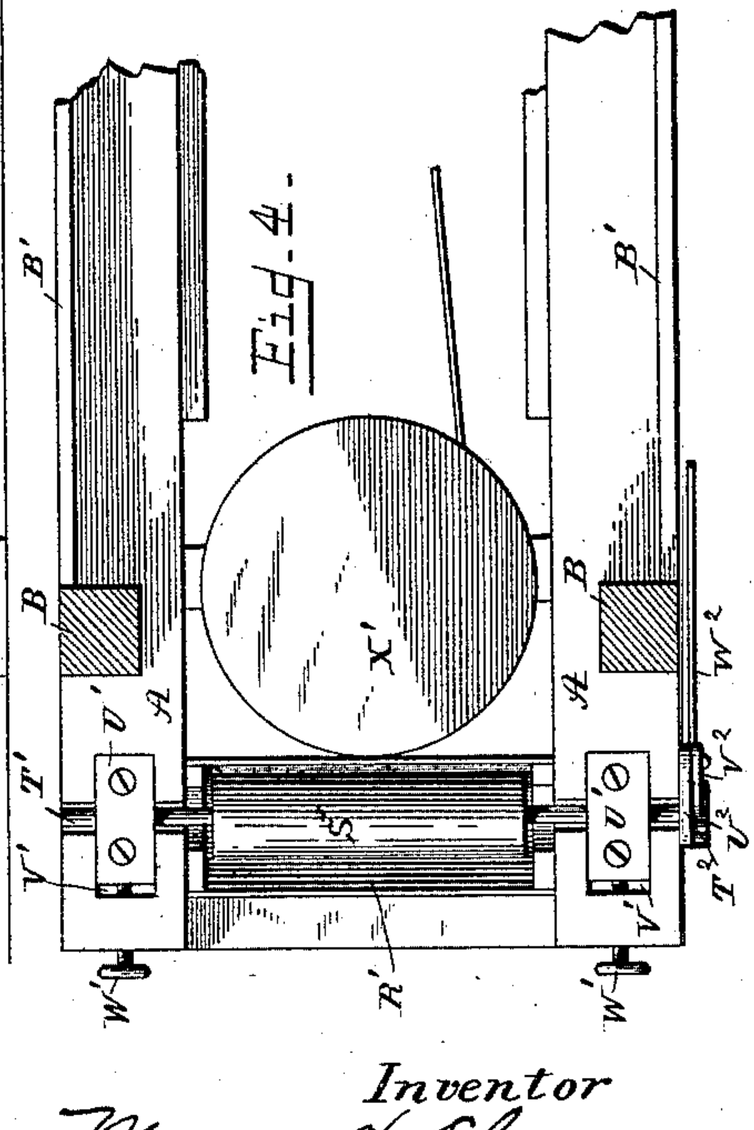


Fig. 4.



Witnesses
Edwin L. Bradford
C. D. Davis

Inventor
Morgan H. Sly
By C. M. Alexander
Attorney

UNITED STATES PATENT OFFICE.

MORGAN H. SLY, OF ALEXIS, ILLINOIS.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 443,012, dated December 16, 1890.

Application filed February 25, 1890. Serial No. 341,693. (No model.)

To all whom it may concern:

Be it known that I, MORGAN H. SLY, a citizen of the United States, residing at Alexis, in the county of Warren and State of Illinois, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has for its objects to produce a simple and economical printing-press whereon newspapers and other large sheets may be printed with ease and rapidity and with a minimum amount of labor, the invention being particularly designed to furnish a press having no complicated machinery, and which can be supplied at such cost as to place it within the reach of small establishments.

The above-mentioned objects I attain by the means illustrated in the accompanying drawings, in which—

Figure 1 illustrates a top view of a press constructed according to my invention, showing the impress-cylinder by which the sheet is carried to and impressed upon the type-form in position over the said form. Fig. 2 represents a side elevation showing the impress-cylinder in position to receive the sheet and the inking-rollers in position to take the ink previously to applying it to the distributing-disk. Fig. 3 represents a longitudinal vertical sectional view of the press, showing the impress-cylinder in position over the receptacle into which the papers are delivered and ready to commence operation. Fig. 4 represents a top view of a part of the press, showing a portion of the inking devices. Fig. 5 represents a perspective view of the ink-distributing disk detached, with a portion broken away, showing part of the mechanism by which the disk is operated; and Fig. 6 represents a longitudinal vertical sectional view of the impress-cylinder and a portion of the press-bed in cross-section.

Referring to the drawings, the letter A indicates the bed of the press, which is provided with suitable legs or supports to hold it at a convenient elevation. Near one end of the press it is provided with vertical standards B, which in the present instance are combinations of two of the supporting-legs, but which may be independent thereof, if desired. To these standards at their upper ends (which are beveled or sloped for the purpose) is secured an inclined table or shelf C, upon which the sheets to be printed are placed and from which they are fed. The lower edge of said table or shelf is provided with projecting fingers D, upon which the lower edge of the sheet as fed forward rests until seized to be carried to the type-form, as more fully hereinafter explained. The said sheet is held at the ends of the fingers D until just about to be seized by means of short fingers E, secured to a rail F, the side arms of which are adjustably secured in socketed heads G, pivoted to the sides of the standards B, so as to permit the rail to be swung upward at the proper time to release the sheet previous to its removal, the upward movement being effected by means of a cam-arm H, which is secured to one of the sides of the rail and operated by a disk or wheel at one end of the impress-cylinder, as will more fully hereinafter appear.

Forward of the standards B, and extending from recesses therein, are arranged two guide-rails B′, which are secured to the upper side edges of the press-bed and terminate near the right-hand end thereof. At the said end are arranged, also, upwardly-curved arms B^3, which limit the movement of the impress-cylinder, (indicated by the letter I in the respective figures.) The said cylinder is composed of a solid intermediate section K, having hollow cylindrical heads L at each end, as shown in detail in Fig. 6 of the drawings. The solid section of the cylinder gives it the proper weight to impress the paper upon the type-form, and may vary in length, according to the size of the press. The heads are arranged to travel upon ways M at the top of the press-bed within the rails B′ as the cylinder traverses the bed. The section K is recessed longitudinally at one side and provided with a central bearing N within said recess for a longitudinal shaft P, which extends through the ends of the sections K and is provided with a bend R, under which bears a flat spring

S for holding the shaft in a fixed position. The ends of the shaft within the hollow heads are provided with crank-arms T, to which are attached arms V, which project through openings or slots in the peripheries of the heads L for the purpose of shifting the shaft, for the purpose hereinafter explained.

The shaft is provided with curved fingers U, which may be brought against one edge of the recess in the section K to grasp the paper at the proper time in order to carry it with the cylinder to the type-form. Through the cylinder extends longitudinally and centrally a shaft W, which is screw-threaded at its ends and provided with screw-threaded nuts X. To the ends of said shaft are secured flanged wheels Y, which are separated from the ends of the cylinder by means of the collars Z of the side pieces A′ of a carriage, in which the inking-rollers C′ are supported. The carriage is provided with wheels D′ at the sides, which travel upon ways E′ at the inner sides of the press-bed. The side bars A′ of the carriage are connected and braced by transverse bars A″. The guide-rails B′, before mentioned, set up in the spaces between the wheels and the ends of the cylinder and guide the cylinder over the bed as it is passed back and forth and prevent it from leaving the bed.

At each side of the bed of the press, near the upper edge thereof, is pivoted at one end a rail F′ by means of a pivot-pin G′, each rail resting in a movable guide-bracket H′, secured to the side of the press-bed. Below the free ends of the said pivoted rails set the short arms of two angle-levers I′, which are fulcrumed to a shaft K′ and have their long arms working in guide-brackets L′ and extending upward, so as to be in the path of the cylinder when elevated. The said levers are connected with two straight levers M′, fulcrumed to the press-bed at N′, the connection being effected by means of connecting-rods P′. The said levers also extend upward into the pathway of the cylinder I for the purpose hereinafter explained.

The letter R′ indicates an ink-receptacle, which is located in the frame of the press-bed at the end below the inclined feed-table, and in the upper part of said receptacle sets a fountain-roller S′, the shaft-journals T′ of which have their bearings in movable blocks U′, which are adjustably set in seats V′ for the purpose, and confined therein by means of binding-screws W′.

The letter X′ indicates a rotating ink-distributing disk, which is located in a horizontal position just in front of the ink-receptacle. The said disk is mounted upon the upper end of a vertical shaft Z′, which is stepped in a bearing in a cross-beam A², secured to the frame of the press-bed. The under side of said disk X′ is provided with an inverted crown-ratchet annulus B², with the teeth of which is adapted to engage a spring-actuated or weighted pawl C², pivoted to an arm D², which is swiveled to the shaft I′. To the outer end of said arm D² is secured one end of a connecting-rod E², the other end of which is connected with the end of an arm F², secured to the fulcrum-shaft K′ of the angle-levers I′, before mentioned, the connecting-rod E² passing through suitable passages in the beams G², which support the form-bed H² of the press. The said form-bed is provided with cross-beams I² at the bottom, which rest upon the upper ends of the vertical adjusting-screws K², passing up through the beams G², by means of which the type-form may be leveled and adjusted. The section K between the heads has a surfacing composed of longitudinal staves of wood H³, to which is attached a web or blanket L², which gives an elastic bearing to the sheet during the impression. The wheels Y at each end of the impress-cylinder I are provided with crank-pins M², having loosely-fitted sleeves N², by means of which the cylinder may be rolled and caused to traverse the bed of the press.

At suitable points in the ways M of the press-bed are formed depressions N², P², and R², into which the arms V project during the movement of the cylinder for the purpose hereinafter explained.

To one of the vertical standards B is secured a curved arm S², which serves to actuate one of the arms V to cause the shaft P to move and the fingers U to seize the paper to carry it forward.

The letter T² indicates a pawl-lever, which is loosely attached to one of journals T′ of the ink-fountain roller S′. To the said journal is fastened a ratchet-wheel U², with which engages a pawl V², pivoted to the lever T². The said lever T² is connected by means of a connecting-rod W² with one of the rods P², so as to give the fountain-roller S′ a step-by-step motion to convey the ink, as more fully hereinafter explained.

The operation of my invention is as follows: The impress-roller I being in the position shown in Fig. 3 of the drawings and the paper properly placed upon the feed-table, the press is ready for use. The cylinder is then rotated by means of crank-handles, so as to traverse the press-bed in the direction of the feed-table. Just before reaching the feed-table the periphery of one of the flanged wheels Y comes in contact with the cam-arm H, operating the same, so as to elevate the rail F and fingers E, so as to release the edge of the paper to be fed and held to the impress-cylinder. The arm V to the left, as shown in the respective figures, then comes in contact with the cam-arm S², secured to one of the standards B, depressing said arm and bringing the fingers U down upon the edge of the paper to be seized and gripping it against the edge of the longitudinal recess in the section R of the roller I, the opposite arm V on the right

entering the recess N^2 and permitting the shaft P to turn sufficiently for the purpose. The inking-roller carriage in the meantime has been carried back, so as to pass the smaller inking-roller thereof over the ink-fountain roller S′, taking a quantity of ink therefrom. The movement of the cylinder I is now reversed and the cylinder moved toward the right of the press, carrying the paper with it and inking the rotating type-disk, in order to uniformly diffuse the ink upon the inking-rollers for the next operation of the press. The impress-cylinder passes over the surface of the type-form, carrying the sheet with it, until the arm V at the left drops into the recess R^2 at the right of the press-bed, permitting the arm V at the right to be forced inward by contact with the way over which the cylinder travels, moving the shaft P so as to throw the fingers into the position shown in Fig. 6, so as to release the sheet and drop it into the receptacle at the end of the machine. The inking-rollers on the forward movement as well as the backward movement of the cylinder inks the face of the type ready for the next subsequent impression. In its movement toward the right the flanged wheels Y come in contact with the long arms of the angle-levers I′, turning them down and elevating the short arms, so as to elevate the rails F′. The treads of the wheels Y then ride upon the elevated rails F, so as to carry the impress-cylinder I over the surface of the type-form and clear thereof, in order not to be soiled by contact therewith, which would result in soiling the next sheet carried by the said impress-cylinder. When the impress-cylinder arrives at the position shown in Fig. 2 of the drawings, the levers M′ will be forced backward, dropping the short arms of the angle-levers I′ and permitting the rails I to fall, so that the impress-cylinder on its return movement will ride on the ways M and closely over the surface of the type-form, so as to take the impression upon the sheet of paper from the inked surface thereof. At each movement of the levers I′ and M′ the ink-fountain roller S′ will be moved slightly by the pawls and ratchet T′, T^2, and V^2 and the connecting-rod W^2, so as to take up the ink from the ink-receptacle. By the same movement through the medium of crown-ratchet B^2, pawl C^2, arm D^2, connecting-rod E^2, and arm K′ the ink-distributing disk will be slightly rotated, so as to present fresh surfaces to the inking-rollers at each successive movement of the impress-cylinder, and thus secure the effective inking of the type.

It will be perceived that as constructed a press may be furnished which will be simple and inexpensive, and which will uniformly supply the ink to the inking-rollers, distribute it from the same uniformly upon the face of the type-form, and automatically seize the paper, impress the same upon the face of the type, and release and deliver the sheet after the impression has been made with the same accuracy and facility of the more expensive presses.

In some instances the wheels D′ may be flanged, as shown in dotted lines in Fig. 1 of the drawings, enabling the tread of the wheels to be made broader, the flanges guiding the wheels between the top rails of the press, permitting the ways E′ to be dispensed with. This construction is especially applicable to large presses where a heavy impress-cylinder is used.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a bed carrying a type-form, standards erected near one end of the bed and supporting an inclined table, fingers D, projecting from the lower edge of this table, a rail F, adjustably secured in pivoted brackets G, secured upon opposite sides of the standards, this rail being provided with fingers E, and a curved forwardly-projecting arm H, and a roller I, mounted upon the bed and carrying paper-grasping devices, the said roller carrying flanged rollers, one of which is adapted to pass under and elevate the arm H and attached rail, all arranged substantially as herein described.

2. The combination of a bed carrying a type-form, a roller I, mounted on said bed, inking-rollers connected to said roller I, a fountain-roller at one end of said bed, a horizontal rotating ink-disk X′ adjacent to the said fountain-roller and provided on its under side with a crown-ratchet wheel B^2, a horizontally-vibrating arm D^2 under said disk, a weighted pawl carried by this arm, a connecting-rod E^2, connecting the end of the arm D^2 to an arm F^2, secured to a transverse rock-shaft K′, journaled in the bed-frame, and upright levers secured to the ends of the said rock-shaft K′ and arranged in the path of the roller I, substantially as described.

3. The combination, in a printing-press, of a type-supporting bed, an impress-cylinder adapted to traverse the same, the guide-rails at the top of the bed, the movable rails pivoted to the sides thereof, and the connected levers located in the path of the impress-cylinder, whereby the cylinder is raised and lowered in passing over the type-form, substantially as specified.

4. The combination, in a printing-press, of a type-supporting bed, an impress-cylinder adapted to traverse the same, an inking-roller carriage and ink-roller, the pawl-and-ratchet mechanism attached to the shaft of the roller, a lever extending in the pathway of the impress-cylinder, and a connecting-rod whereby the roller is moved to distribute the ink, substantially as specified.

5. The combination, with the impress-roller,

of the central weighting-section, the hollow heads secured to the ends thereof, the bent shaft extending through the ends of the central section, and the spring for holding said shaft, the fingers secured to the shaft, the arms secured to crank-arms on said shaft and projecting through openings in the hollow heads, and the cam-arm and slotted ways, whereby the arms are operated to cause the fingers to grip and release the paper, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

MORGAN H. SLY.

Witnesses:
ROBERT I. SMILIE,
F. S. TALBOT.