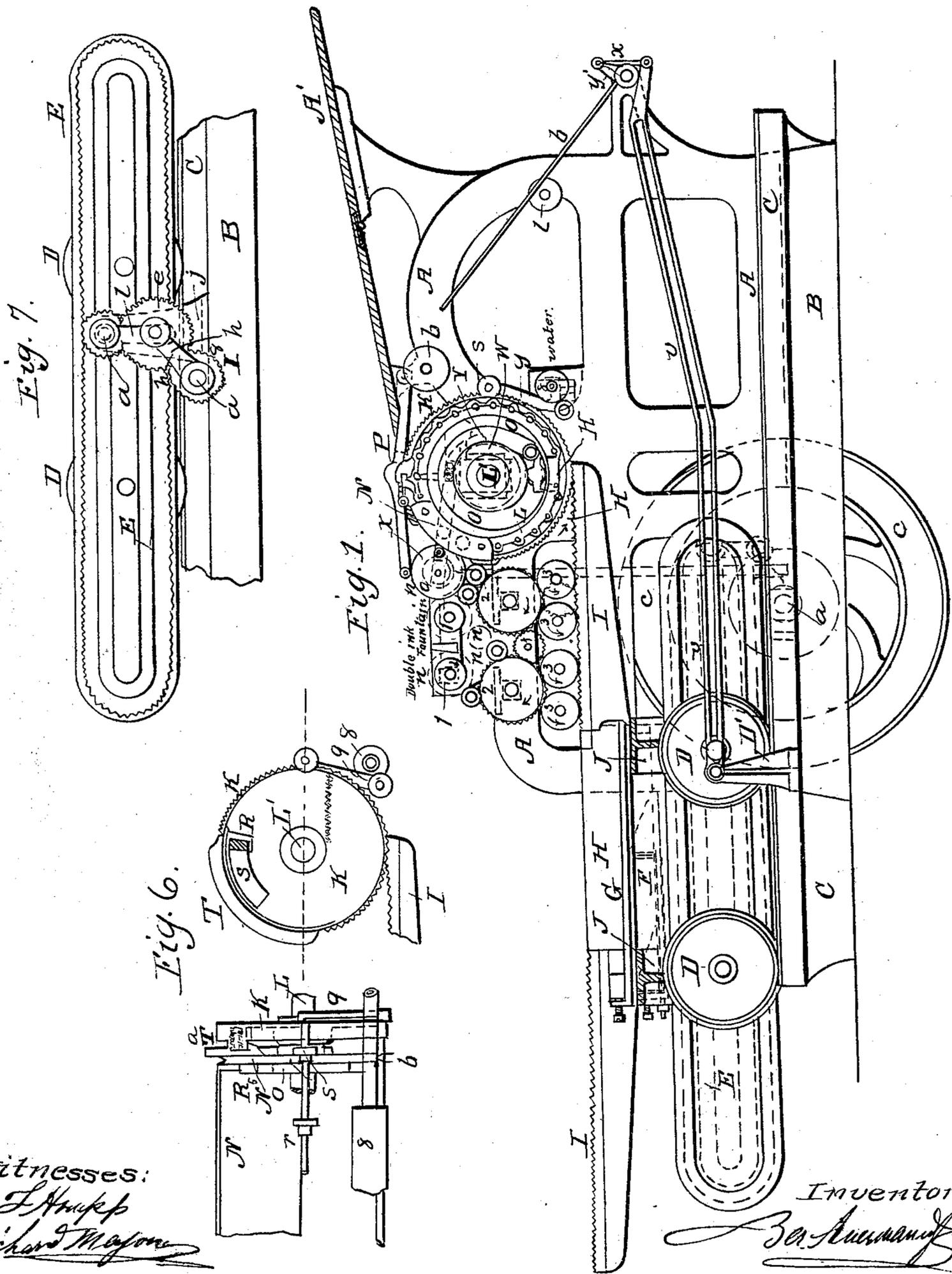


B. ACKERMANN.
Lithographic Press.

No. 32,672.

Patented July 2, 1861.



Witnesses:
Jos. L. Knapp
Richard Mayone

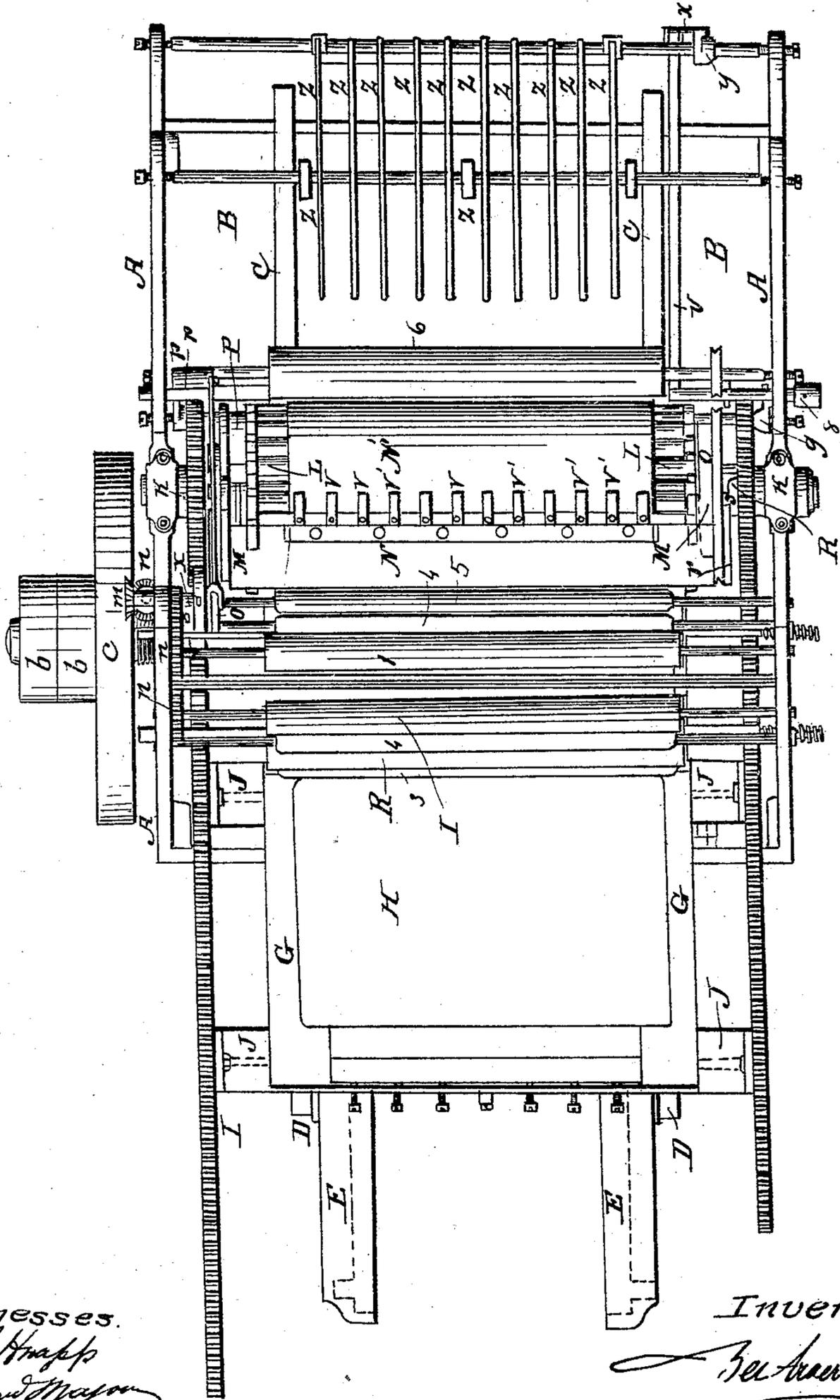
Inventor:
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Fig. 3.



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Inventor:
 B. Ackermann

UNITED STATES PATENT OFFICE.

BERNARD ACKERMANN, OF NEW YORK, N. Y.

LITHOGRAPHIC POWER-PRESS.

Specification of Letters Patent No. 32,672, dated July 2, 1861.

To all whom it may concern:

Be it known that I, BERNARD ACKERMANN, of the city, county, and State of New York, have invented certain new and useful Improvements in Lithographing Power-Presses; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1. is a longitudinal elevation taken through *a, b* of Fig. 2. Fig. 2. is a transverse elevation. Fig. 3. general plan of the machine, the feed board *A'* taken off. Fig. 4. is a longitudinal section of the different parts receiving the lithographic stone, showing the arrangement for raising and lowering said stone according to its thickness, and also to regulate the pressure for printing, this being obtained by turning the screw *s'* which is loose in the part *F* and screws in the double wedge *F'*, thus moving said wedge forward and backward in the part *F* and consequently raising and lowering the bed *G*. Fig. 5. is a section through *c, d* of Fig. 2. showing the interior of the cylinder *L* with antifriction rollers *P'*, and also the disposition of scraper box *P*, scraper holder *Q* and scraper *Q'*. Fig. 6. shows the disposition and arrangement of the motion of the tympan frame *N* fastened to the sides *M* which are set in motion by the pieces *R* being part of the gears *K* geared with the two racks *I*; this figure also shows the disposition of the arrangement finishing to carry the sheet of paper, after it is let loose by the grippers *U'*, in position to be taken off by the fly, this being obtained by means of a set of rollers *r* on an axle turning in two arms *q* fastened on an axle suspended in two centers, so that the rollers *r* are drawn on the tympan *N'* by a spring attached to the arms *q*, and thus roll the sheet off through the motion of the tympan *N'* around the cylinder *L*. In order to let the tympan frame *N* pass said arrangement, the axle and rollers *r* are pushed off by a cam *T* fastened to one of sides *M*, said cam pressing against a roller *s* fixed on the same axle that *r* is. Fig. 7. shows the way the motion is given to part *F* receiving bed *G* and stone *H*, by means of two internal racks *E* with guides *E'* the

whole fastened to the part *F*. The main shaft, *a*, on which are the pulleys *b* and fly wheel *c*, passes through one of the rails *C*, and gives the motion to the shaft *a'* by means of the gears *d, e, f, g, g', g'*. Two arms *h, h*, being loose on the shaft *a*, are connected with the arms *i, i* loose on the shaft *a'*, and guide said shaft *a'* up and down in the internal racks *E* by means of the guides *E' E'* and *j*, so that the shaft *a'* going on revolving, moves the two internal racks *E* forward and backward when moving in the upper or lower parts of said internal racks *E* to which are fastened four flange wheels *D* running on the rails *C*, the whole forming thus a carriage.

A is the frame *A'* the feed board, *B* bed plate, *C* two rails fastened to the bed plate *B*.

D are four flange wheels fastened to the two internal racks *E* and guides *E'* fastened themselves to part *F*.

F' is a double wedge. *G* bed receiving the lithographic stone. *H*.

I are two racks fastened to the carriage *F* by two hangers *J*, that give the motion to two gears *K* which have cavities to receive two pieces *R* pressing against the part *S* of the sides *M* to which is bolted the tympan frame *N*, so that when the carriage moves in the direction of the arrow, the gears *K* through *R* press against *S* and take along in their revolution the tympan frame *N* which is attached the gripper bar *U* and grippers *U'*; in the same moment the grippers holding the sheet of paper, begin to move by the motion of the gears *K* moved by racks *I*, the stone also moves along and meets the sheet of paper under the scraper *Q'* which at this moment has been moved in a vertical position, for the purpose of giving the required pressure to the sheet on the stone, by the cam *O* in which rolls a roller attached to the scraper box *P* by a dove-tailed piece as shown in Fig. 5, giving the position the scraper arrangement is in when the carriage is about to start to receive the impression. At this moment the scraper begins to move to the vertical position through the cam *O* and remains in such vertical position until the carriage arrives at the end of its forward motion and ready to go back when scraper falls back to let stone pass freely under it. Now the carriage begin-

ning to move backward, the gears K will also move in the opposite direction and leave the tympan frame N stand quiet after such has been hooked by the lever p in which is a notch hooking in a pin fastened to one of the sides M, said lever p is raised again by cam o just before the carriage comes to its point of departure as shown in Fig. 1, and after the pieces R of gears K have withdrawn in their cavity in order to slip over the incline part of pieces S of sides M, getting again in position to start tympan frame N.

L is a cylinder keyed to the shaft L' and made with antifriction rollers P' so as to facilitate the motion of tympan and tympan frame N and N' around said cylinder which is stationary.

P is a scraper box, being part of the cylinder L, and moving on its centers.

Q are two vise shaped pieces holding the scraper Q'. The pieces Q are screwed fast by screws along the scraper box P and thus hold firm scraper Q'.

V is a cam as shown in dotted lines in Fig. 1; said cam is connected through a rod Y to another cam X on same axle as cam o . Around cam V rolls a roller attached to small arm connected also to one fastened on the gripper bar U, thus opening the grippers U' by letting said roller move up the cam V and stay in such position until the time comes when cam X pushes through Y cam V which is independent on its axle, and thus lets the roller drop and this one dropping moves the gripper bar U by the connection arms, and closes the grippers, grasping the sheet of paper. The tympan frame in its motion takes the rollers along which when reaching the upper part of cam V opens then the grippers again.

R is a worm giving the motion to vertical shaft l and cam X and o by means of a gear gearing with said worm, and a pair of miter gear m , the whole calculated to give one revolution to the cams X and o to one forward and backward motion of the carriage and stone.

n are a set of gears giving motion to the inking rollers 1. The two cylinders 2 receive their motion through a pinion gearing with one of the racks I and have also a lateral motion which is obtained by one of the ends of the axle screwing in and out in their respective boxes.

v is a slotted inclined lever, in which slot moves a roller u attached to the outer end of one of the flange wheels D axles, thus the carriage moving forward and backward, said roller u presses the lever down, such taking along the fly bar by means of the connecting pieces x and y , and then moving backward brings said fly again in position to receive the sheet of paper. 1 are two rollers tak-

ing ink from two fountains, the whole arranged so as to be able to use thick and thin ink at the same time, or by taking out a partition between the two rollers use only one kind of ink. This will prove valuable for fine printing, for the stone being first rolled in with thin ink receives before leaving the inking apparatus a rolling of thick ink. 2 are two brass cylinders receiving the ink from drop rollers 4 and have said ink distributed by means of the rollers 5, then delivering ink to the rollers 3 rolling the stone in with ink when such passes under them.

6 is a roller over which the sheet of paper, after being printed, is carried on top of the fly fingers z .

7 are tape pulleys carrying the sheet to the fly.

8 is a roller arranged so as to hold water for the purpose of damping the stone before such moves under the inking apparatus; said damping roller having an opening at one of its ends for pouring the water, this is led inside and comes out of the cylinder or roller through porous material with which it is covered. The position of said roller behind the cylinder L is in order to obtain a better damping, said roller rolling over the stone both ways.

What I claim as my invention and desire to secure by Letters Patent is—

1. The manner of setting the tympan frame N and tympan N' grippers U' etc., in motion, without interrupting the motion of the gears K and therefore leaving them continually geared with the racks I, substantially as described.

2. The manner of operating the scraper q' by means of the cam o attached to the revolving tympan frame N or part thereof, which cam is connected to the scraper box P by means of a dovetailed pin and roller, set in motion by said cam O or its equivalent, the whole as described.

3. The method of fastening the scraper q' in the scraper box P by means of the vise shaped pieces q .

4. The manner of adjusting the bed G receiving the stone H by means of the double wedge F' moved by a screw so that by turning the screw forward or backward the bed G is raised or lowered, the same arrangement also used for regulating the pressure.

5. The manner of carrying the sheet of paper off, after the grippers U have let loose, by means of the rollers r , s the arms q and cam T attached to the tympan frame N or part thereof and operating substantially as described.

6. The disposition of the double ink fountain, two cylinders and four rollers rolling the stone, the whole disposed in reference to cylinder L as shown and described.

7. The manner of operating the carriage F by means of the two internal racks E and guides E' the whole as described.

5 8. The manner of operating the fly by means of the inclined slotted lever *v*, the roller *u*, the connecting pieces *x* and *y*, substantially as described.

9. The position of the damping roller 8

behind the cylinder in order to get a better damping of the stone, such rolling over the 10 stone both ways, whereas being in front of cylinder L it can roll but once over stone.

BER. ACKERMANN.

Witnesses:

RICHARD MAJORS,
CHAS. F. KNAPP.