B. F. BERRY.

PRINTING APPARATUS.

APPLICATION FILED JUNE 24, 1912.

1,049,652. Patented Jan. 7, 1913.

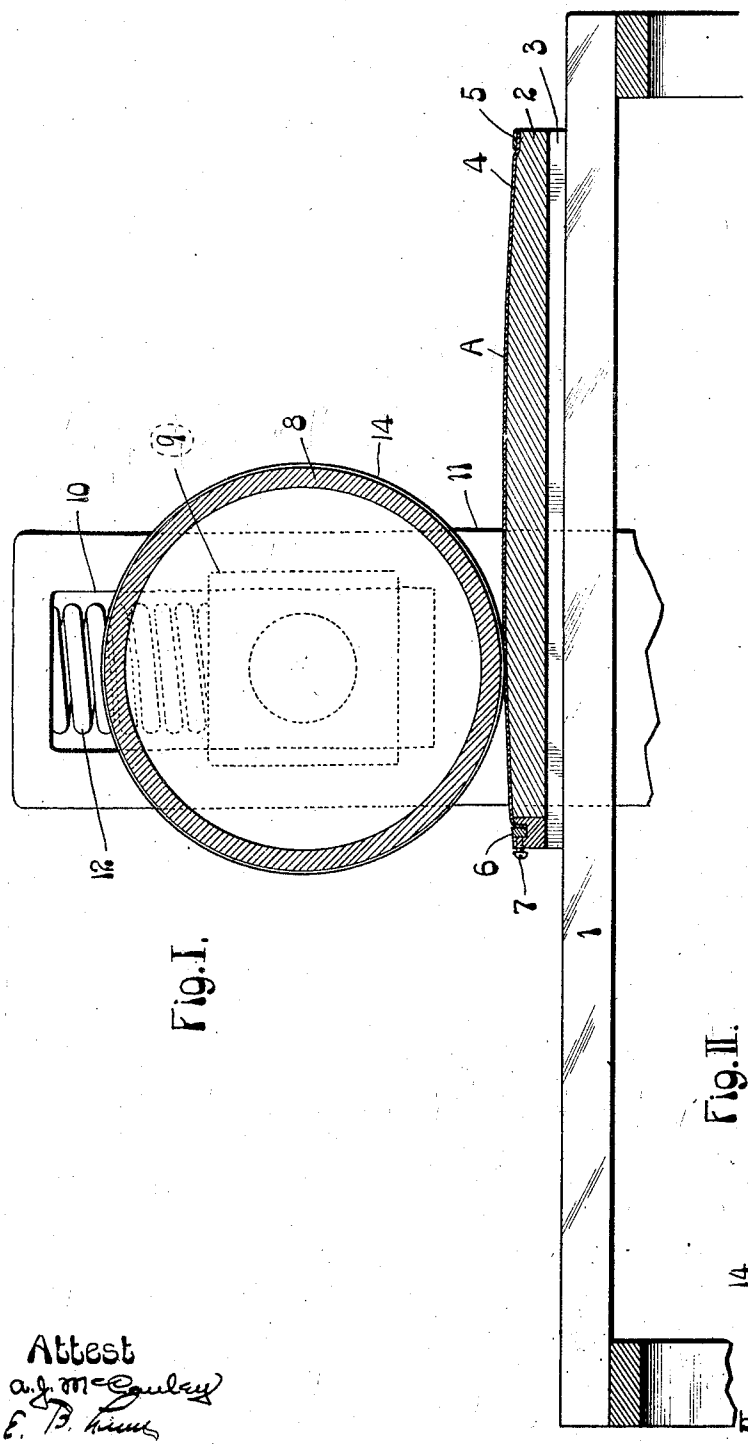

Fig. I.

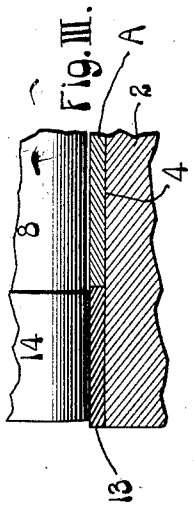

Fig. III.

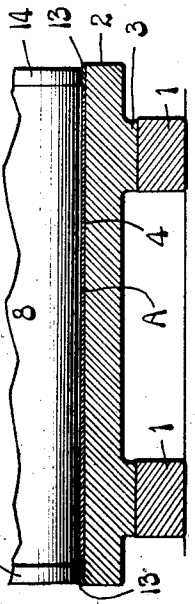

Fig. II.

Attest

a. J. McGauley

E. B. Hines

Inventor:

B. F. Berry

by Knight + Cook

Att'ys.

UNITED STATES PATENT OFFICE.

BENJAMIN F. BERRY, OF ST. LOUIS, MISSOURI.

PRINTING APPARATUS.

1,049,652. Specification of Letters Patent. Patented Jan. 7, 1913.

Application filed June 24, 1912. Serial No. 705,440.

To all whom it may concern:

Be it known that I, BENJAMIN F. BERRY, a citizen of the United States of America, and a resident of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Printing Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a printing apparatus of such construction as to permit the use of lithographic sheets in lieu of lithographic stones in printing operations, the object of the present improvement being similar to that contemplated by U. S. Patent No. 932,100, issued to me August 24, 1909. Said patent may, therefore, be referred to for a full and complete understanding of the objects sought by the type of printing apparatus to which my present invention pertains.

Figure I is a vertical longitudinal section of a printing apparatus embodying the features of my present invention. Fig. II is a vertical cross section through the track and bed of my apparatus, with a fragment of the impression cylinder in elevation above the bed. Fig. III is an enlarged section of a fragment of the bed, with an end portion of the impression cylinder in elevation.

In the drawings:—1 designates track rails that constitute a track upon which the bed of my printing apparatus operates, and while these track rails are shown as independent members, it is obvious that a track comprising a single member of the requisite width might be used in lieu of said rails. I will, for the sake of convenience, hereinafter refer to the track as including the two rails 1. In the present form of my apparatus, the top surfaces of the track rails 1 are of uniform plane from end to end of each rail, as distinguished from the curved top surfaces in my former patent hereinbefore alluded to.

2 designates a lithographic sheet bed that is seated on the track rails 1 and is adapted to be reciprocated thereon by any suitable means. This bed is preferably provided at its bottom with runners 3, which rest on the track rails, but which may be dispensed with, if desired. The bed 2 is provided with a curved top face 4, the curvature of said face being longitudinally of the bed and the apex of said curvature being between the ends of the bed. The curved top face of said bed receives a lithographic sheet A, that may be of zinc or other suitable sheet material, and which will lie firmly upon said face, owing to the curvature of the latter, without any tendency to buckle, as it would if the top face of the bed were level. The reason for this is clearly pointed out in my earlier patent, and it is deemed unnecessary to repeat such reasons herein. The lithographic sheet is indicated by the letter A, and said sheet may be secured to the bed 2 by any suitable means, such, for instance, as a binding strip 5 attached to the bed over the sheet at one end of the former, and a clamping strip 6 located in a groove at the other end of the bed and bearing against an end of the lithographic sheet in said groove, to which the said strip is held by means, such as binding screws 7.

8 designates an impression cylinder situated above and transversely of the track rails 1 and beneath which the bed 2 is adapted to reciprocate. This impression cylinder is movable vertically to permit the passage of the curved bed 2 thereunder during printing operations, and to provide for the cylinder being maintained in its proper position longitudinally of the printing apparatus, its journals are mounted in suitable bearing boxes 9, movable vertically in slots 10 arranged in standards 11 extending upwardly at the sides of the printing apparatus,—only one of said standards and the parts coöperable therewith being shown in the drawings, but it will be understood that complementary parts are present at the opposite side of the apparatus. Springs 12 located above and resting on the bearing boxes 9 serve to hold said bearing boxes yieldingly depressed, in order that the impression cylinder 8 journaled to said bearing boxes may be constantly held in proper relation to the bed 2 of the apparatus, for the proper performance of printing operations.

When my printing apparatus is in use, the bed 2 with a lithographic sheet thereon, is reciprocated upon the track provided therefor, and it, therefore, moves to and fro beneath the spring pressed impression cylinder to provide for printing being effected through the medium of said lithographic sheet, in a manner similar to that in which lithographic printing is accomplished in the

ordinary form of lithographic printing presses. Inasmuch as it is necessary in my present improvement to utilize means, such as the springs 12, for yieldingly controlling the impression cylinder of the apparatus, in order that the curved bed 2 may pass to and fro thereunder, it is particularly necessary that means be provided to prevent excessive pressure upon the printing sheet by the impression cylinder caused by the action of the springs, which tend to force the cylinder toward the press bed. Therefore, to avoid such excessive pressure, and at the same time acquire the necessary pressure by the impression cylinder upon a sheet of paper, or other material to which an impression is to be made from the lithographic sheet, I provide the bed 2 with bearers 13 and the impression cylinder with bearers 14. The bearers 13 are located on the bed adjacent the side edges, and the bearers 14 are cylindrical members located at the ends of the impression cylinder and adapted to bear upon the bearers 13. It will be apparent that these bearers serve to so support the impression cylinder at all times as to permit of only the desired pressure being derived from the impression cylinder, notwithstanding the action of the springs 12 upon said cylinder. Another important advantage in the use of the curved bearers on the bed 3 and the cylindrical bearers on the impression cylinder lies in the fact that the continuous contact of these bearers against each other during printing operations provides for the steadying of the impression cylinder during its rotation, thereby avoiding slurring of said cylinder over the lithographic sheet, with resultant blurring of the printing.

I claim:—

A printing apparatus comprising a straight track, a bed adapted to reciprocate in a straight line on said straight track, said bed having a curved top face adapted to receive a lithographic sheet, curved bearers on the curved top face of said bed, and a cylinder resting on said curved bearers and adapted to reciprocate vertically when said bed is reciprocated in a straight horizontal line on said straight track.

B. F. BERRY.

In the presence of—
A. J. McCauley,
E. B. Linn.