No. 862,452. PATENTED AUG. 6, 1907.

A. B. DICK.

STENCIL DUPLICATING APPARATUS.

APPLICATION FILED JAN. 3, 1905.

2 SHEETS—SHEET 1.

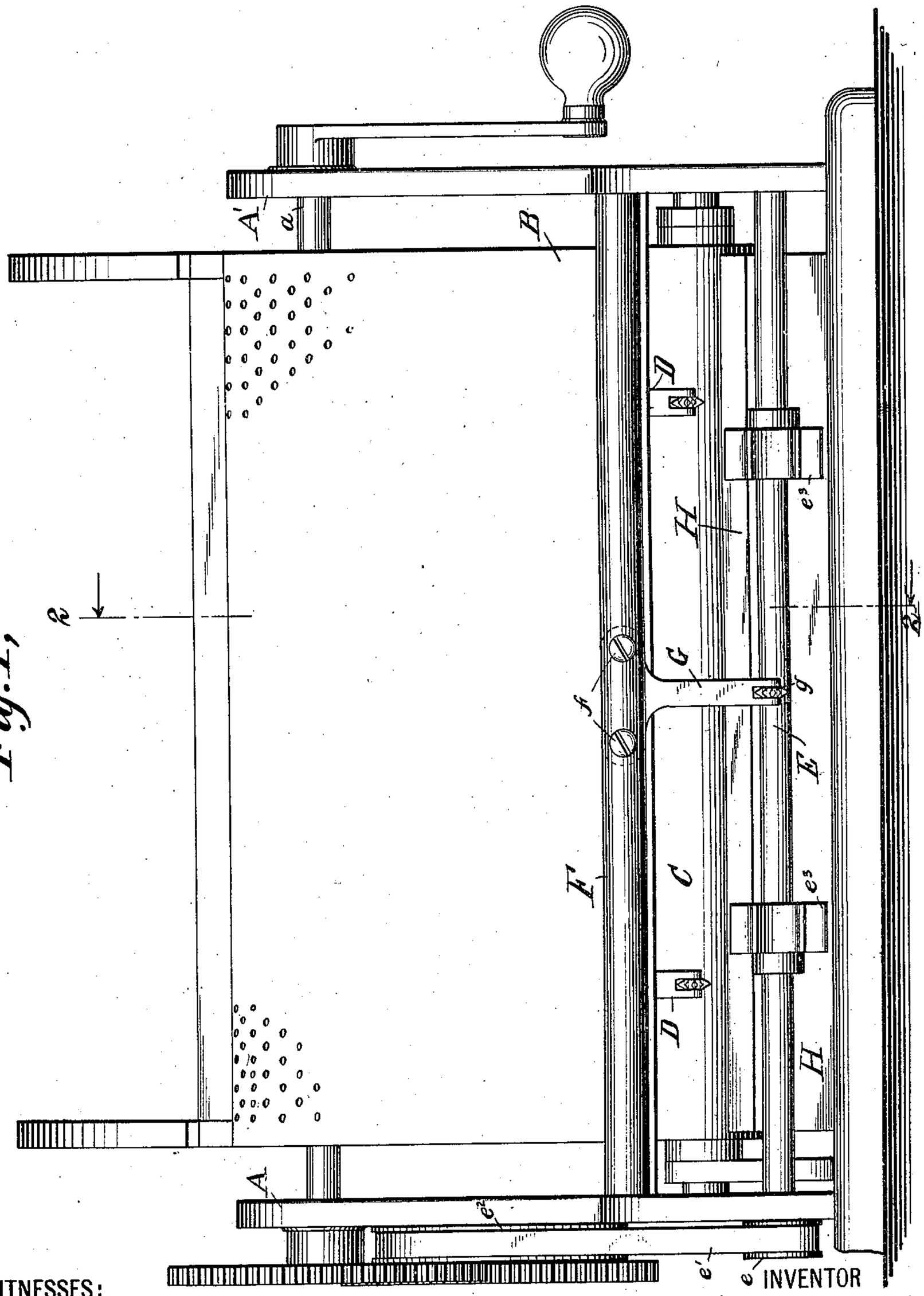

Fig. 1.

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2 SHEETS—SHEET 2.

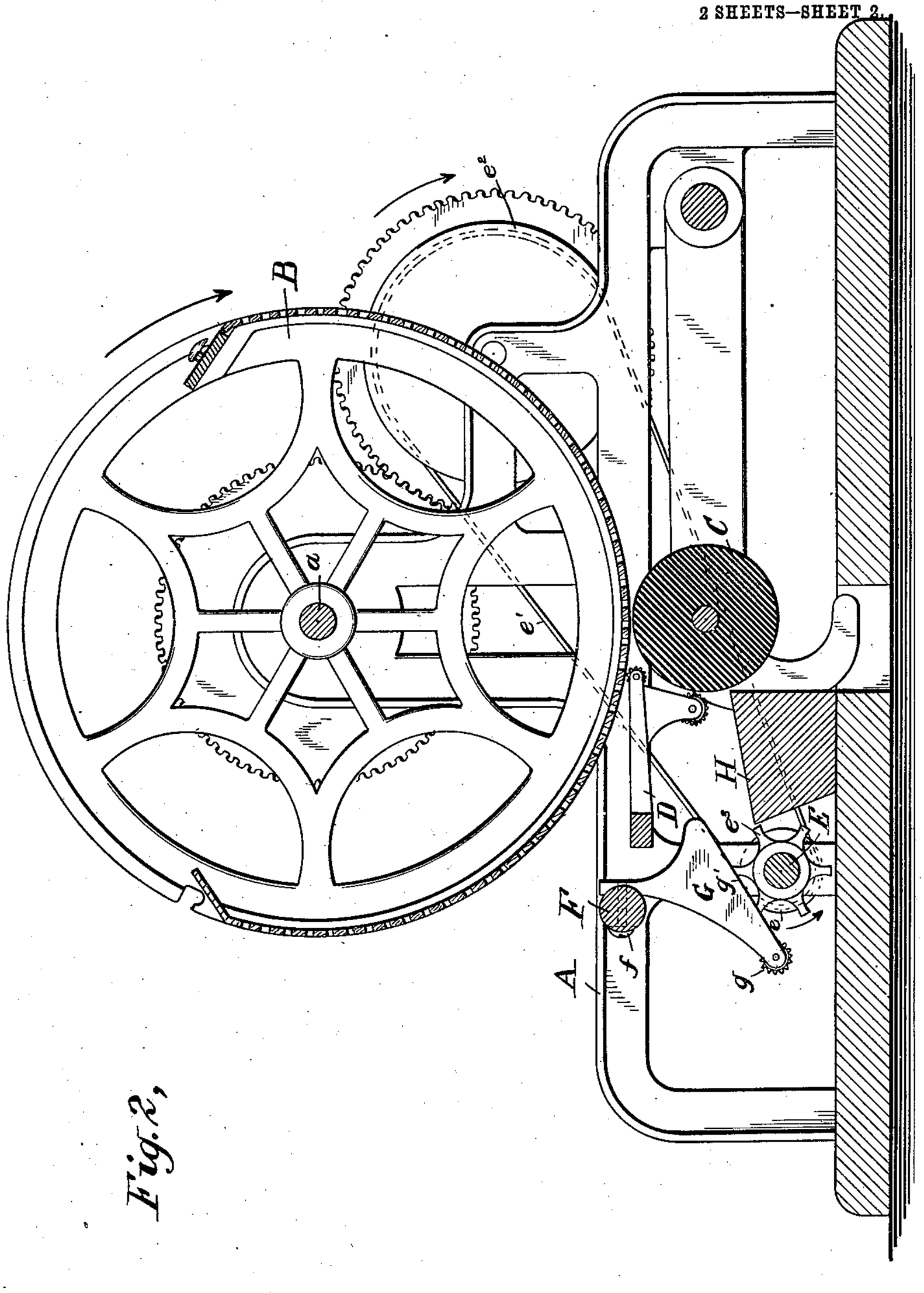

Fig. 2,

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STENCIL-DUPLICATING APPARATUS.

No. 862,452. Specification of Letters Patent. Patented Aug. 6, 1907.

Application filed January 3, 1905. Serial No. 239,413.

To all whom it may concern:

Be it known that I, ALBERT B. DICK, a citizen of the United States, residing at Lake Forest, in the county of Lake and State of Illinois, have invented a certain new and useful Improvement in Stencil-Duplicating Apparatus, of which the following is a specification.

The invention concerns more particularly the sheet-delivery mechanism of apparatus for stencil-duplication and will be described herein in connection with such apparatus, although it is obvious that the same may be employed to equal advantage in printing, folding and other mechanisms. A difficulty heretofore experienced in devices of this general character has been the failure of the sheets to pass evenly from the mechanism and deposit themselves in a pile in a suitable receiving tray or other device. This has been due in large measure to the lack of mechanical provision for advancing the sheets from the mechanism, as well as to the fact that during the operation of imprinting upon or otherwise treating the sheet the same becomes electrically charged, due to which the sheets as fed from the mechanism cling together or to metallic parts either of such mechanism or of the receiving tray or other device in which such sheets are to be stacked or piled.

In carrying out the invention in an approved form and in a stencil-duplicating apparatus of the general type, for example, shown in Letters Patent Nos. 749,983 and 749,984, granted to me January 19th, 1904, I employ, adjacent to the stencil-carrying drum by means whereof the sheets are imprinted upon, but rearward thereof, a guiding and delivering device, which, mechanically considered, receives the sheets from the stencil-carrying drum and passes the same evenly and in the proper plane and direction to any suitable receiver, as for instance a paper-tray, and which, electrically considered, causes the discharge or neutralization of the electricity with which the sheets have been charged during their passage in contact with said drum or with the feeding apparatus whereby the same are fed to such drum.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is an end view of a stencil-duplicating apparatus provided with my invention, and Fig. 2 is a cross-section on the line 2—2 Fig. 1, certain unimportant parts being omitted for clearness of disclosure.

Referring to these drawings, in which similar letters denote corresponding parts, it will be seen that the supporting frame of the apparatus includes the two side members A, A′, in which is supported, by means of shaft *a*, the drum B, having a foraminated exterior upon which the stencil-sheet is supported. Said drum may be operated by any suitable means, as for instance by hand as illustrated in said Letters Patent No. 749,983, or by a connection with a sheet-feeding device as illustrated in said Letters Patent No. 749,984. Directly underlying the drum B, is the usual pressure-roller C, and adjacent to the point of coaction between said pressure-roller and said drum is, in the present example, a combined paper-stop and -stripper D, the construction and operation whereof will readily be understood from said Letters Patent No. 749,983. The sheets are fed from the right (Fig. 2) between the pressure-roller C and the drum B and against the paper-stop D, and when the stencil-carrying portion of said drum comes into coaction therewith the sheets are imprinted upon and simultaneously fed from between said roller and drum rearward of the machine to any suitable container, such as a paper-tray. The mechanism thus far described forms no part of the present invention.

In Letters Patent Nos. 746,930 and 749,983, heretofore granted to me, means are shown for feeding a sheet from a stencil-duplicating machine in such manner as that the longitudinal center thereof is depressed and the lateral edges elevated, this conducing to perfect feeding by preventing the sheets from rolling upon themselves. Such means in each case comprise a member having fixed elevated portions coacting with the lateral edges of the sheet. In the present invention, the same result is accomplished, plus a rearward feed of the sheet, in the following manner:—

E designates a shaft extending between and journaled in the side members A, A′, of the frame. One end thereof extends through said frame and is provided, in the present instance, with a pulley *e*, with which coacts a belt *e′* which may be driven by a pulley e^2 to which power may be transmitted in any suitable manner. Said shaft E is provided with two spur-wheels e^3, keyed or otherwise secured thereon, their peripheries being provided with teeth or serrations. Said spur-wheels are so spaced apart as that the same will coact with a sheet near the lateral edges of the latter, permitting the longitudinal center of the sheet to be depressed and thereby curving it in such manner as to preclude the objectionable rolling or folding above referred to. Also and for the purpose hereinafter referred to, said spur-wheels and the shaft upon which they are mounted are, like the side members A, A′ of the frame, of metal or other conducting material.

F designates a rod extending between and connected with the side members A, A′, of the frame. Detachably secured to this rod, as for instance by means of screws *f*, is a sheet-guard G, here shown as extending downwardly toward the shaft E and spur-wheels e^3, and provided at its extremity with a star-wheel *g*. The under side of said sheet-guard is inclined, as shown at *g′*, for better coaction with the sheet. As will be seen, said paper-guard is preferably arranged about midway

between the spur-wheels e^3, the star-wheel in the extremity thereof being adapted to make such contact with the passing sheet (whose printed surface is uppermost) as to preclude the streaking of the ink characters thereon. Preferably said sheet-guard G and its supporting rod F will, like the parts above referred to, be of metal or other conducting material.

H designates a block, of wood or other suitable material, bridging the space between the pressure-roller C and the shaft E and its spur-wheels e^3 and having an inclined surface in order that the sheet may readily slide thereon.

In operation, a sheet which is being imprinted upon by the stencil-carrying drum is simultaneously fed from between said drum and the pressure-roller, whereupon the forward edge thereof is passed downwardly and over the inclined surface of the block H, and thence over the spur-wheels e^3. The longitudinal center of such sheet, as above described, is bowed downwardly between said spur-wheels, and this is made doubly sure by the coaction of the sheet-guard G therewith. In this form, the sheet is fed smoothly and continuously from the mechanism and discharged into the paper-tray or other device. It may not be absolutely essential that the shaft and spur-wheels E and e^3 be employed, although the same conduce to perfect discharge of the sheets. Said shaft and spur-wheels may either be stationary or free to revolve under the movement of the sheet, which is pressed rearwardly, as above explained, by the coaction of the drum B and the pressure-roller C. Or, if desired, the other features of the invention herein disclosed may be realized if for such shaft and spur-wheels there be substituted the means shown, for example, in said Letters Patent No. 746,930.

During the operation of imprinting upon the sheet, the friction of the pressure-roller and stencil-carrying drum upon the opposite sides thereof (and where a sheet-feeding apparatus, such for instance as that described in said Letters Patent No. 749,984, is employed, the effect is the same) is such that said opposite sides of the sheet are charged with electricity of opposite polarity, and if attempt be made to deliver the sheet so charged from the apparatus without dissipating the charge in some manner, the difficulty above referred to will be experienced, this varying in degree with variations in atmospheric conditions. In the present invention, such difficulty is overcome by passing the sheet so charged between metallic parts, which if electrically charged at all are of the same polarity, whereby the electrical energy of opposite polarity upon the opposite sides of the sheet is conducted from such sheet and dissipated in the framework of the machine, the same thereupon offering no further obstruction to the smooth and orderly delivery of the sheets in a receiving tray, as above specified.

In referring above to the "longitudinal center" of a sheet, I have had in mind, for illustration, the use of a sheet of greater length than width, as for instance, a sheet of letter-size. It will be obvious, however, that if the sheet be of greater width than length, the word "longitudinal" should be applied to that dimension of the sheet which extends in the line of its delivery.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:—

1. In sheet-delivery mechanism for stencil-duplicating and like apparatus, the combination with means for imprinting upon and forwarding a sheet, of two electrically connected metallic parts, one engaging said sheet on one side at points adjacent to the lateral edges and the other engaging the sheet on the opposite side near the longitudinal center thereof, said parts being arranged to give the sheet a transverse curvature in passing between them, substantially as described.

2. In a sheet-delivery mechanism for stencil-duplicating and like apparatus, the combination with means for imprinting upon and forwarding a sheet, of two electrically-connected metallic parts adapted to engage opposite sides of each sheet as it is forwarded by said means, one of said parts being a pair of supports coacting with one side of each sheet at points adjacent to the edges thereof and the other of said parts coacting with the other side of said sheet near the longitudinal center thereof, substantially as described.

3. In sheet-delivery mechanism for stencil-duplicating and like apparatus, the combination with means for acting upon and forwarding a sheet, of means for curving said sheet between its lateral edges, and a sheet-guard overlying such sheet and having an inclined portion coacting therewith at about the longitudinal center thereof, substantially as set forth.

4. In sheet-delivery mechanism for stencil-duplicating and like apparatus, the combination with means for acting upon and forwarding a sheet, of means for receiving said sheet and curving the same between its lateral edges, and an overlying sheet-guard having a star-wheel and an inclined surface coacting with said sheet at about the longitudinal center thereof, substantially as set forth.

This specification signed and witnessed this 28th day of December, 1904.

ALBERT B. DICK.

Witnesses:
M. H. BURKART,
R. R. HARRINGTON.