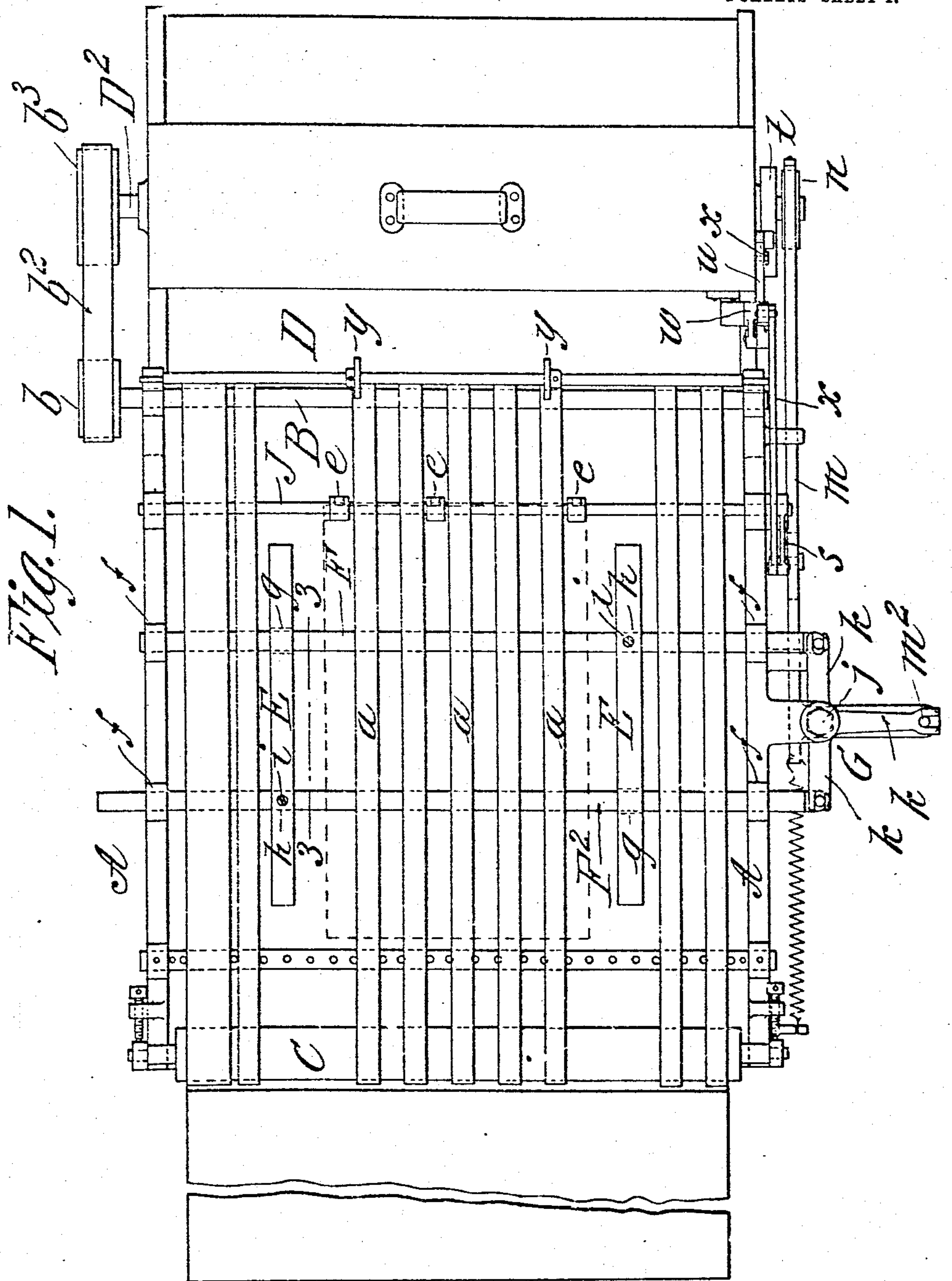


E. J. CASEY.  
SHEET FEEDING APPARATUS.  
APPLICATION FILED APR. 6, 1908.

898,831.

Patented Sept. 15, 1908.

2 SHEETS—SHEET 1.



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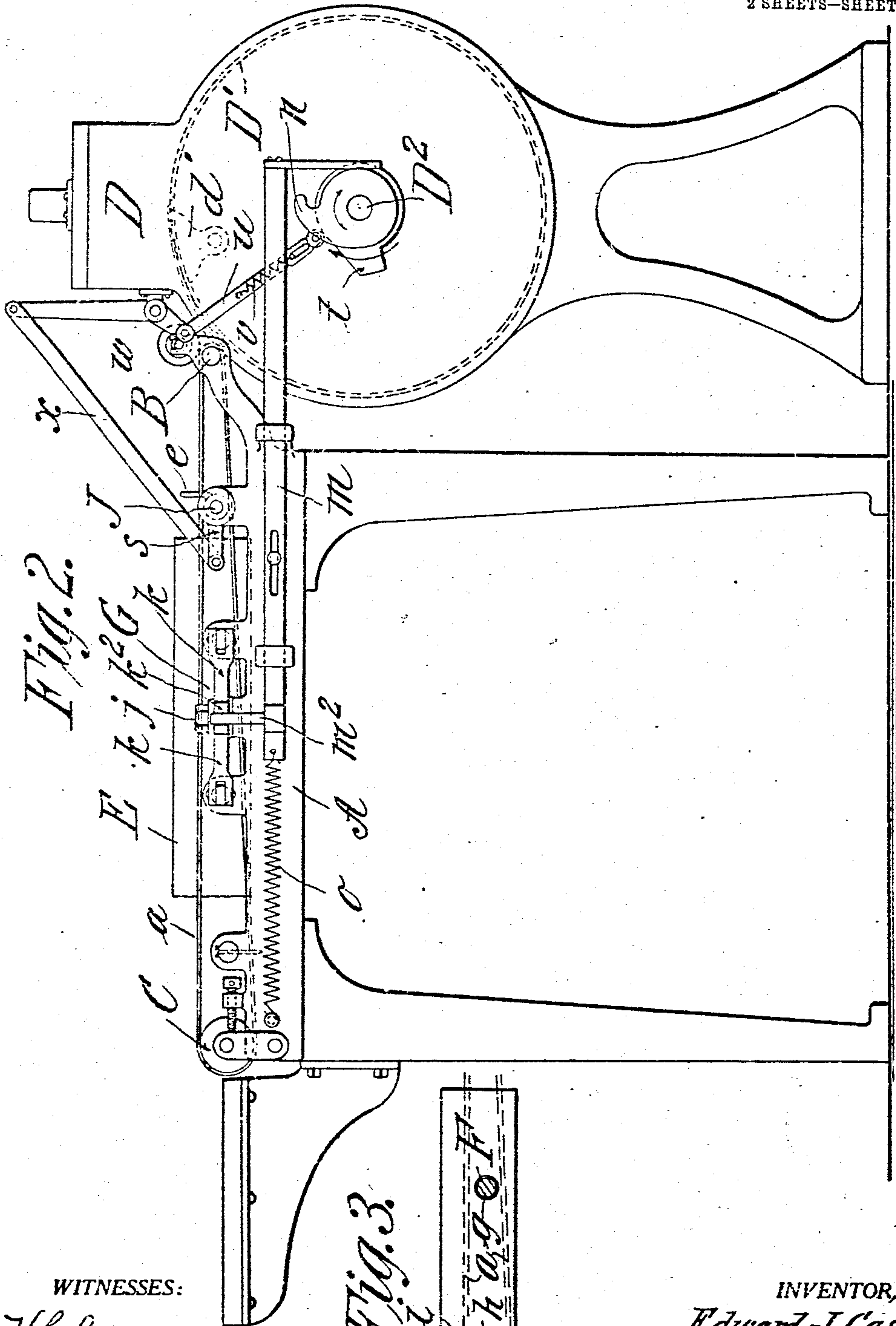


Fig. 2.

Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## SHEET-FEEDING APPARATUS.

No. 898,831.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed April 6, 1908. Serial No. 425,406.

*To all whom it may concern:*

Be it known that I, EDWARD J. CASEY, a citizen of the United States of America, and resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Sheet-Feeding Apparatuses, of which the following is a full, clear, and exact description.

The apparatus or mechanism constituting the present invention has been provided and employed as a means for feeding sheets directly after being taken from a printing machine and before the impressions are dry into a bronzing machine for the passage of the sheets therethrough for receiving bronze powder which becomes adherent to and is burnished on the freshly printed portions of the sheet.

Heretofore, generally, the feeding in of the freshly printed sheets to the bronzing machine has required extreme care on the part of the attendant in order that the sheets be squared and properly positioned on a feed board or table preparatory to being slid or moved to be taken by the revoluble gripper included in the bronzing machine. This has required the services of a feeder additional to the one running the printing press.

By the provision of the present sheet feeding devices, it becomes possible and convenient for the pressman to take out the printed sheets from the printing press and lay them more or less at random on the feeder for the bronzing machine, which feeder is operative to square the sheets before they are permitted to be conveyed into the bronzing machine and thus the requirement of a person additional to the pressman for feeding the sheets to the bronzing machine is dispensed with.

The invention consists in the combination with a plurality of endless feed-tapes, onto which the printed sheets may be laid, one at a time, and by which they are forwardly progressed to the bronzing machine, of one or more movable steps for temporarily arresting each sheet, a pair of oppositely located straight, parallel, and longitudinally ranging, and transversely movable sheet squaring members, and means for imparting approaching and receding movements to said squaring members.

The invention furthermore consists in the combinations or arrangements of parts, and the construction of certain of the parts, all substantially as hereinafter fully described in

conjunction with the accompanying drawings and set forth in the claims.

In the drawings:—Figure 1 is a plan view of the sheet feeding apparatus shown as arranged for coöperation with a bronzing machine; Fig. 2 is a side elevation of the same; Fig. 3 is a sectional elevation of parts as taken on line 3—3, Fig. 1.

In the drawings, A A represent the opposite side uprights of the frame for supporting the endless feed tapes *a a* which run around forwardly and rearwardly located transverse rolls B and C supported by such frame, which latter is arranged in proximity to a bronzing machine D, the nature and construction of which are not necessarily to be described, although it may be stated that one description of bronzing machine in conjunction with which the present apparatus may advantageously be employed, is illustrated and described in Letters Patent dated Nov. 1, 1898, No. 615,441, and embodying in a casing, within which the printed sheets to be bronzed are fed, a cylinder carrying rev- olubly a gripper for engaging the leading end of each sheet and for carrying the sheet around on the cylinder whereby it is subjected to the bronze supplying, buffing and surplus bronze removing devices; and in Fig. 1, in dotted lines D' represents the revoluble cylinder, and *d'* represents the location of the sheet gripper revoluble with the cylinder.

The main shaft of the bronzing machine is taken advantage of as a source of power from which the various movable parts of my present apparatus are primarily driven,—it being perceived that the forward tape roll B has a pulley *b* thereon driven by a belt *b*<sup>2</sup> from pulley *b*<sup>3</sup> on the bronzing machine main shaft D<sup>2</sup>.

*e e* represent movable fingers which are periodically positioned for temporarily arresting each sheet in its travel on the feed tape so that such sheet may be “straightened”, that is, rectified as to its position so that its opposite longitudinal edges are truly longitudinal of the machine, and, of course, at right angles to the axis of the carrying drum in the bronzing machine; and E E represent a pair of oppositely located straight parallel longitudinally ranging and oppositely transversely movable sheet squaring members which may have the form of boards or plates with their edges uppermost.

F and F<sup>2</sup> represent a pair of bars extending



horizontally and transversely across the machine, one somewhat forward of the other and supported and guided in and through guideways *f f* therefor at opposite sides of the machine frame at or near the top thereof. The longitudinally ranging squaring board or member *E* which is towards one side of the machine frame is adjustably secured to the rearward one *F<sup>2</sup>* of said bars whereby it may be positioned horizontally and transversely for its traverses, bodily, within different regions or zones in the width of the feeding apparatus, and such member has by an aperture *g* therethrough a supporting and guiding engagement on the forward one of the bars *F*; and similarly but in a relatively opposite manner the other squaring member which is towards the other side of the machine is adjustably connected with the forward bar *F* and has by the aperture *g* therethrough a supporting and guiding engagement with the rearward bar *F<sup>2</sup>*. The adjustment of each straightening or squaring member *E* along the length of the bar to which it is connected is affected by making the member with an aperture *h*, whereby it closely fits the bar, and providing a fastening screw *i* which, when loosened, leaves the member to be slid inward or outward, and which, when set against the bar, holds the member *E* rigidly on, and to be moved in unison with, the bar.

The bars *F* and *F<sup>2</sup>* have their endwise movements transversely of the machine imparted simultaneously in opposite directions for causing the straightening or squaring members to approach and recede, by means as follows: *G* represents a T-shaped lever swinging or oscillating on a horizontal plane about the pivot *j* at the junction of the aligned arms *k k*, which arms have engagements, by pin and slot, with the ends of the slidable bars *F, F<sup>2</sup>*; *m* represents a slide bar supported and guided on the side of the machine frame, and by the extension *m<sup>2</sup>* thereof engaging the third arm *k<sup>2</sup>* of the T-shaped lever. The endwise movement of the slide bar *m* is imparted in one direction by the cam *n* which is mounted on any suitable revoluble shaft, such, in the present instance as the main shaft of the bronzing machine, while the opposite endwise movement of the slide bar *m* is imparted by the retracting spring *o*.

The stop fingers *e e* for temporarily arresting the sheet on the feed tapes are made as substantially radially projecting fingers on a rock shaft *J* extending from side to side of the machine forward of the squaring boards *E E* and adapted to be swung up, as shown in the drawings between the courses of the tapes and above the level of the upper tapes, and to be swung to out of the way positions below the plane of the sheet feed on the upper tapes to leave the course and feeding of the sheets unobstructed. The said rock-shaft *J* is actu-

ated by a cam and lever motion as follows:—*s* represents a lever arm or crank on the rock shaft; *t* represents the revoluble cam; *u* represents a thrust rod endwise forced in one direction by the cam and retracted by the spring *v*; *w* represents an elbow, or two-armed lever, to one arm of which the thrust rod has a connection and to the other arm of which one end of a link is connected, the latter by its other end being connected with the rock shaft lever arm *s*.

Preparatory for a run of printed sheets of a given width on this feeding apparatus and to the bronzing machine the squaring boards *E* are adjusted on their respective transversely slidable carrying bars *F, F<sup>2</sup>* so that in their most approached relations they have a distance of separation the same as the width of the sheets to be fed. The pressman taking printed sheets one at a time from the press has merely to lay them only approximately straight on the feed tapes, timing the deposit of each sheet with the separation of the boards *E E*; the sheet carried forward by the tapes will be intercepted by the stop fingers *e e* just long enough to permit the approaching boards *E E* to truly square or straighten the sheet after which, the stop fingers swinging forwardly and downwardly out of the way the sheet proceeds on the tapes and is fed into the bronzing machine.

*y y* represent a pair of disks which are mounted to bear, gravitatively, on the upper forward portion of the forward tape-roll *B* (or upon the tapes running therearound), it being perceived that the axis of the disks or rolls *y y* is above and slightly forward of the axis of the tape-carrying roll *B*; and by this provision the leading end of each sheet is slightly downwardly deflected so as to hug the periphery of the cylinder in the bronzing machine and to thereby insure by such proximity of the sheet to the cylinder the engagement of the sheet by the cylinder carried gripper or grippers.

Although this feeding apparatus has been primarily designed and used in conjunction with a bronzing machine, the invention is not limited in this respect and may be employed as a sheet straightening or squaring and feeding apparatus for general use.

I claim:—

1. The combination with a plurality of endless feed tapes, of one or more movable stops for temporarily arresting each sheet and means for moving said stops across and away from the plane of sheet feed, a pair of horizontal, transversely movable bars, a longitudinally ranging sheet squaring member towards one side of the machine and secured to one of said bars and having a free guiding engagement with the other of said bars, a second longitudinally ranging sheet squaring member towards the other side of the machine, secured to the other one of said



bars, and having a free guiding engagement with the first squaring member carrying bar, and means for imparting reciprocatory movements to said bars in reverse directions transversely of the line of tape feed.

2. The combination with a frame having forwardly and rearwardly located bar guides at the opposite side members thereof, and a plurality of feed tapes mounted to run longitudinally between the frame sides, of a pair of bars extending across the machine movable through said guides and having their locations one forward of the other relatively to the line of tape feed, a longitudinally ranging squaring member towards one side of the frame, adjustably secured to the rearward one of said bars and having by an aperture therethrough a supporting and guiding engagement on the forward bar, and a second squaring member towards the other side of the frame connected with the forward bar and having an aperture therethrough, a supporting and guiding engagement with the rearward bar, an intermediately pivoted lever with which the ends of said bars are engaged and means for imparting a rocking movement to said lever for reciprocating the bars and squaring members simultaneously in reverse directions.

3. In a sheet feeding mechanism, the combination with a plurality of endless feed-tapes, of one or more movable stops for temporarily arresting each sheet in its travel on the feed tapes, a pair of oppositely located straight, parallel, longitudinally ranging, and transversely movable sheet squaring members, a transversely arranged pair of bars, on each of which one only of said squaring members is secured, a pivoted T-shaped lever with the opposite arms of which said bars are engaged, a slide-bar engaging the third arm of said T-shaped lever, a rotatable cam for moving said slide bar in one direction, and a spring for retracting said slide bar.

4. In a sheet feeding mechanism, the combination with a plurality of endless feed-tapes, onto which the sheets may be laid, one at a time, and by which they are forwardly progressed, of a transverse rock shaft between the upper and lower courses of the tapes having a plurality of substantially radially projecting stop fingers, for temporarily arresting each sheet in its travel on the feed tapes, means for imparting rocking movements to said finger carrying rockshaft, a pair of oppositely located straight, parallel, longitudinally ranging, and transversely

movable sheet squaring members, to the rear of said stop fingers, and means for imparting transverse approaching and receding movements to said squaring members.

5. In a sheet feeding mechanism, the combination with a plurality of feed-tapes, of a transverse rock shaft between the upper and lower courses of the tapes, having a plurality of substantially radially projecting stop fingers, and provided with a lever arm, a rotatable cam, a thrust-rod actuated thereby, a pivoted lever to which said thrust rod is connected, and a link connecting said lever, and said rock shaft lever arm, a pair of oppositely located straight, parallel, longitudinally ranging, and transversely movable sheet squaring members, to the rear of said stop fingers, and means for imparting transverse approaching and receding movements to said squaring members.

6. In a sheet feeding mechanism, the combination with a plurality of endless feed tapes onto which the sheets may be successively laid and by which they are forwardly progressed, of one or more movable stops for temporarily arresting each sheet in its travel on the tapes, a pair of oppositely located parallel longitudinally ranging and transversely movable sheet squaring members, means for imparting transverse approaching and receding movements to said squaring members, and means located at the forward ends of the feed tapes for imparting a downward deflection to the leading end portions of the sheets for the purpose explained.

7. In a sheet feeding mechanism, the combination with a plurality of endless feed tapes and forwardly and rearwardly located rolls around which the tapes are run, of one or more movable stops for temporarily arresting each sheet in its travel on the tapes, a pair of oppositely located parallel longitudinally ranging and transversely movable sheet squaring members, means for imparting transverse approaching and receding movements to said squaring members, and a roller yieldingly bearing on the upper forward portion of the forward tape-roll causing a downward deflection of the leading portion of the forwardly fed sheet.

Signed by me at Springfield, Mass., in presence of two subscribing witnesses.

EDWARD J. CASEY

Witnesses:

WM. S. BELLOWS,  
G. R. DRISCOLL.