No. 752,382. PATENTED FEB. 16, 1904.

T. C. DEXTER.

SHEET CONVEYING MACHINE.

APPLICATION FILED OCT. 25, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

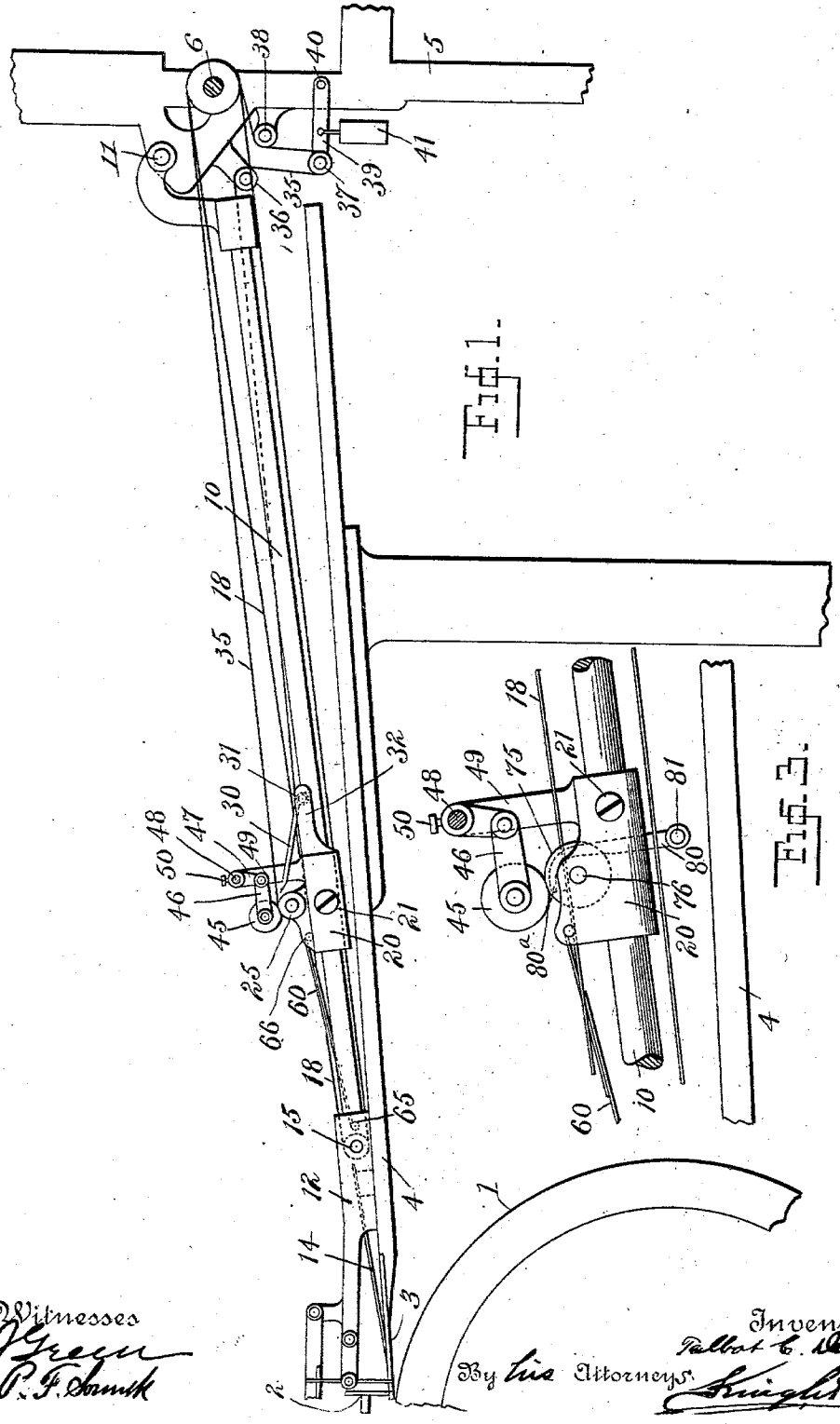


Fig. 1.

Fig. 3.

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NO MODEL. 2 SHEETS—SHEET 2.

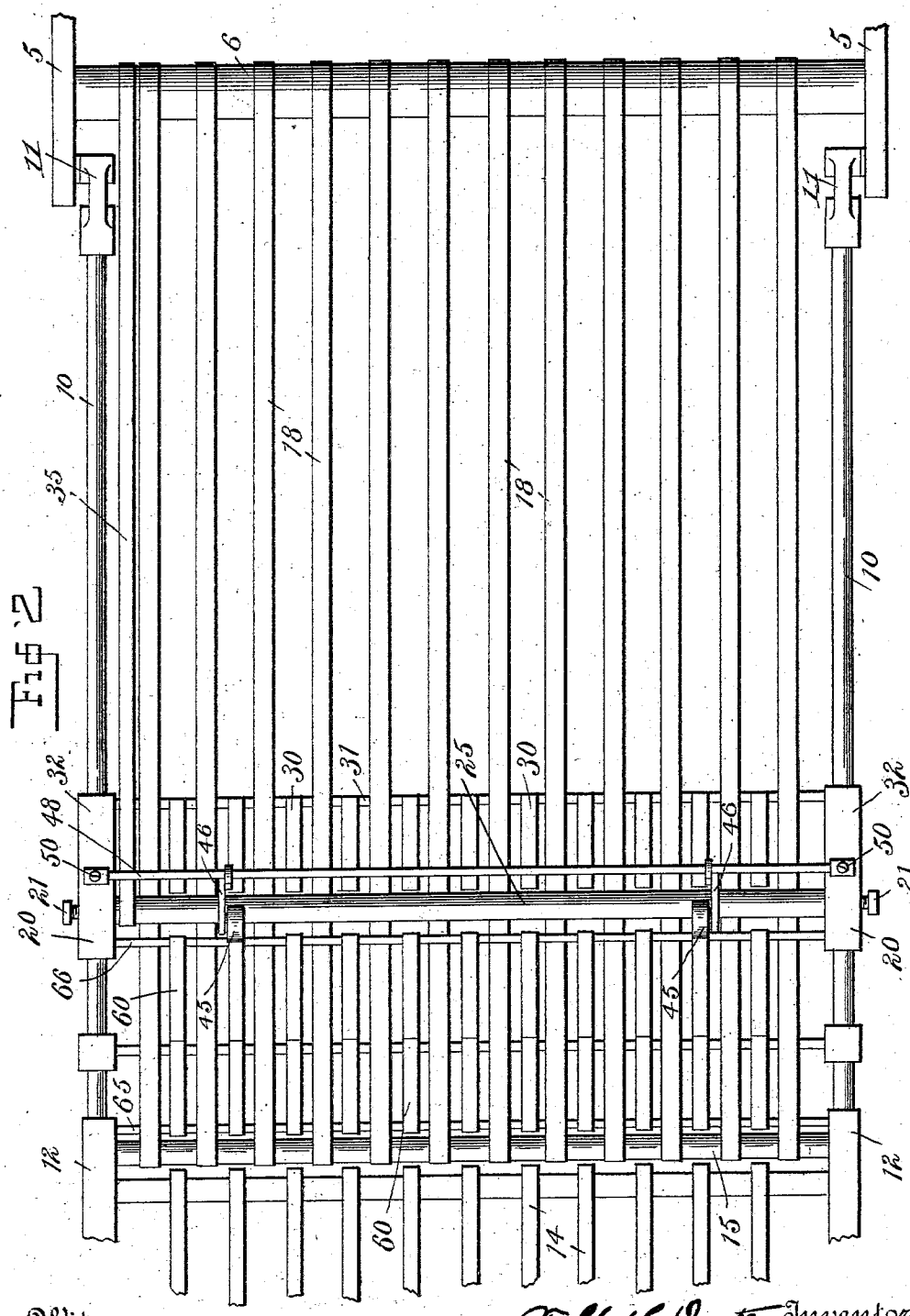


FIG. 2.

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No. 752,382. Patented February 16, 1904.

UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK.

SHEET-CONVEYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 752,382, dated February 16, 1904.

Application filed October 25, 1902. Serial No. 128,713. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, residing at Pearl River, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Sheet-Conveying Machines, of which the following is a specification.

The present invention relates to improvements in the sheet-feeding mechanism for conveying successive sheets of paper from an automatic paper-feeding machine to a printing-press, folding-machine, ruling-machine, or other machine designed to operate upon sheets of paper.

The object of my present invention is to produce a simple and effective sheet-conveying mechanism which can readily be adjusted to suit the different sizes of sheets which are to be fed to a printing-press or other machine.

To this end my invention consists of a series of sheet-carrying belts or tapes arranged to convey sheets from an automatic feeding-machine to the gage end of the feed-board of the printing-press or other machine and a feed-roller extending transversely of the tapes and adjustable in the plane of feed for raising the leading edge of the successive sheets to cause the sheets to overlap.

In the preferred form of my improved sheet-conveyer I provide a constantly-driven feed-roller arranged above the carrying portion of the tapes and a series of upwardly-inclined sheet-deflecting fingers extending from below the carrying portion of the tapes to said feed-roller for causing the sheets to pass upwardly over said feed-roller. The constantly-driven feed-roller and the sheet-deflecting fingers are preferably mounted upon an adjustable carriage, which can be adjusted toward and away from the feed-gages of the machine to which the sheets are to be fed. I also prefer to employ in combination with the constantly-driven feed-roller two or more friction-rollers, which operate in peripheral contact with said constantly-driven roller.

In another form of my present invention I arrange the constantly-driven feed-roller or a series of constantly-driven feed-rollers mounted on a common shaft journaled beneath the carrying portion of tapes, but with the periphery of said roller or series of rollers projecting sufficiently above the carrying portion of the tapes to elevate the leading edge of the successive sheets. I may also employ a series of air-blast pipes arranged with their blast-nozzles beneath the periphery of the series of constantly-driven rollers and presented parallel with the plane of feed for supporting the leading edge of the sheet above the rear edge of the preceding sheet to insure the overlapping of the sheets. This air device is also important in providing a film of air between the overlapping portions of the sheets to facilitate the withdrawal of each sheet after it is registered.

In order that my invention may be fully understood, I will first describe the same with reference to the accompanying drawings and afterward point out the novelty more particularly in the annexed claims.

In said drawings, Figure 1 is a detail side elevation of my improved sheet feeding or conveying mechanism. Fig. 2 is a detail plan view of the same. Fig. 3 is a detail elevation of a modified form of my invention.

1 represents the impression-cylinder, 2 the front gage, 3 an under guide, and 4 the feed-board, of a printing-press.

5 represents part of the frame of an automatic paper-feeding machine.

6 is the feeding-machine tape-roller, driven by a part of the feeding-machine in a manner well understood.

10 represents the side bars of the frame which supports the sheet-conveying mechanism which carries the successive sheets from the feeding-machine to the printing-press or other machine. These bars 10 are pivotally mounted upon the feeding-machine frame at 11 and carry upon their forward ends the side brackets 12, upon which are mounted the side-registering mechanism, (not shown,) and the press-controlling devices, which are partly indicated but not described in detail, since they do not form any part of my present invention. These side brackets 12 rest upon the feed-board 4 and also carry the metal plates or bars 14, which form an incline leading from the delivery-tapes to the gage end of the feed-board.

15 indicates the delivery-tape roller, suitably journaled in the side brackets 12 referred to.

18 indicates the parallel series of sheet-carrying tapes, which are supported upon the tape-rollers 6 and 15 and driven by the roller 6. These tapes 18 are supported with their upper carrying portion in a gradual incline from the delivery mechanism of the automatic feeding-machine to the gage end of the feed-board of the printing-press or other machine to which the sheets are to be fed.

20 is one of a pair of brackets or carriages which are mounted to slide upon the side bars 10 of the conveyer-frame. These brackets or carriages 20 are secured in the desired adjusted position upon the bars 10 by means of set-screws 21. 25 is a feed-roller suitably journaled in the carriages 20 and extending from side to side of the machine directly above the upper carrying portions of the tapes 18.

30 indicates a series of plates or fingers mounted at their rear ends upon a shaft or bar 31, which is supported in the rearwardly-projecting arms 32 of brackets or carriages 20. These plates or fingers 30 extend from their supporting-bar 31, which is located beneath the carrying portion of the sheet-carrying tapes on an incline toward the upper face of the constantly-driven feed-roller 25, their purpose being to deflect the successive sheets from the plane of the carrying-tapes 18 up over the feed-roller 25.

35 is a driving-tape which passes from the driving-pulley 6 around the feed-roller 25, then around the intermediate pulley 36, belt-tightening pulley 37, and intermediate pulley 38. The belt 37 is journaled in the outer end of a lever 39, pivoted to the feeding-machine frame at 40 and carrying a belt-tightening weight 41. The purpose of the belt or tape 35 is to drive the feed-roller 25. This belt or tape 35 is located at one side beyond the extreme belt-carrying tape 18, so as not to interfere with the free passage of the sheets of paper.

To insure the proper frictional engagement of the roller 25 with the sheets that are passed over it, I prefer to employ two or more friction-rollers 45, freely journaled in arms 46, pivoted to the lower ends of rock-arms 47, extending from an adjustable rock-shaft 48, which is supported in the bracket-arms 49, projecting upwardly from the brackets or carriages 20. Set-screws 50 may be provided for securing the shaft 48 in the desired adjusted position. By adjusting the shaft 48 the friction-rollers 45 may be moved forwardly or backwardly upon the feed-roller 25 to cause the leading edge of the sheets to be deflected more or less toward the delivery portion of the sheet-carrying tapes 18. Supported between the individual tapes at their delivery ends are the adjustable and extensible frictional plates or bars 60 for regulating the propelling force of the tapes upon the sheets. These frictional plates or bars are constructed and arranged as set forth in my application filed of even date herewith, Serial No. 128,711.

Each friction plate or bar consists of two telescoping plate-sections, the sections of which are connected, respectively, to the rods 65 and 66, mounted between brackets 12 and brackets 20, respectively. By adjusting the brackets or carriages 20 the plates or bars 60 will be extended or shortened, as the case may be, in the manner explained in my above-named application.

Referring to Fig. 3 of the drawings, it will be observed that I have shown a slight modification in which a series of friction-rollers or a long peripherally-grooved friction-roller 75 is journaled between the brackets or carriages 20 at 76 between the carrying portion of tapes 18. The periphery of the roller or rollers 75 projects slightly above the carrying portion of said tapes, so as to elevate the leading edge of each sheet as it reaches the rollers. The lift in this modified form of the mechanism is so slight that it is not necessary to employ the sheet-deflecting fingers 30. (Illustrated in Figs. 1 and 2.) The periphery of the roller or rollers 75 is preferably knurled for giving the said roller or rollers a better hold upon the leading edge of the sheet as it advances. In this form of the mechanism the friction-rollers 45 and frictional plates 60 are also employed.

80 represents one of a series of air-blast pipes extending from a blowpipe 81 and having its blast end 80^a presented just beneath the upper surface of the friction roller or rollers 75, so as to blow air in the plane parallel with the carrying portion of the tapes 18. These air-blast pipes 80 rest in the peripheral grooves of the roller 75 or between the individual rollers when a plurality of rollers 75 is employed. The air-blast pipe 81 is supplied with intermediate blasts of air through any suitable means. (Not shown.) This pipe 81 should also be supported in any suitable manner upon the adjustable carriages 20 in order that the blast-pipes 80 will always maintain their proper relation to the feed roller or rollers 75.

The operation of the improved sheet-conveying mechanism is very simple. As the successive sheets are carried toward the printing-press by the tapes 18 their leading edges are deflected upwardly by the plates 30 onto the feed-roller 25, over which they pass to the friction-plate 60, delivery portion of the tapes 18, and inclined plates or bars 14 to the registering-gages. The leading edge of each sheet is caused to partly overlay the rear edge of the preceding sheet to facilitate rapidity in feeding, the desirability of which is well understood by those skilled in the art. In the modified form the rotating feed roller or rollers 75 raise the leading edge of each sheet

from the carrying-tapes 18 and cause the sheets to pass over the roller or rollers 75 down to the feed-gages in the same manner just explained. In this modified form the blasts of air are timed to support the leading edge of each sheet as it leaves the roller or rollers 75, so as to insure said sheet passing above the rear edge of the preceding sheet. The air-blast devices also serve to supply a film of air between the overlapping portions of the sheets, which facilitates the withdrawal of each sheet as it is registered.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a sheet-conveyer, the combination of the sheet-carrying tapes, the tape-rollers, a transversely-extending feed-roller supported adjacent to the tapes between the tape-rollers, with its periphery above the carrying portion of said tapes, suitable registering-gages, and means for adjusting the feed-roller parallel with the plane of feed toward and away from the gages, substantially as set forth.

2. In a sheet-conveyer, the combination of a supporting-frame, tape-rollers journaled in said frame, sheet-carrying tapes mounted upon said tape-rollers, a carriage adjustably mounted upon said frame between the tape-rollers, and a feed-roller journaled upon said carriage with its periphery above the carrying portion of the tapes, substantially as set forth.

3. In a sheet-conveyer, the combination of a supporting-frame, tape-rollers journaled in said supporting-frame, the sheet-carrying tapes mounted upon said tape-rollers, an adjustable carriage mounted upon said supporting-frame between the tape-rollers, a feed-roller journaled upon said carriage with its periphery above the carrying portion of said tapes, extensible friction-plates supported between one of the tape-rollers and said adjustable carriage, and sheet-registering gages, substantially as set forth.

4. In a sheet-conveyer, the combination of the sheet-carrying tapes, with a feed-roller extending transversely of the tapes and supported between the receiving and delivery ends of the tapes with its periphery above the carrying portion thereof, inclined sheet-deflecting plates or fingers intersecting the path of the carrying portion of said tapes and adapted to deflect sheets from the tapes to the feed-roller, and frictional plates or bars also intersecting the path of the carrying portion of said tapes and adapted to lead sheets from the feed-roller to the delivery portion of the tapes, substantially as set forth.

5. In a sheet-conveyer, the combination of a supporting-frame, the tape-rollers, the sheet-carrying tapes mounted upon said tape-rollers, an adjustable carriage mounted upon said frame between the tape-rollers, a feed-roller journaled in said carriage and supported above the carrying portion of the tapes, a series of sheet-deflecting fingers supported upon said carriage and intersecting the path of the carrying portion of said tapes, and registering-gages, substantially as set forth.

TALBOT C. DEXTER.

Witnesses:
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WM. E. KNIGHT.