May 10, 1927. 1,628,292

F. J. WERMES

PRINTED SHEET DELIVERY ATTACHMENT FOR PRINTING PRESSES

Filed Feb. 15. 1924 3 Sheets-Sheet 1

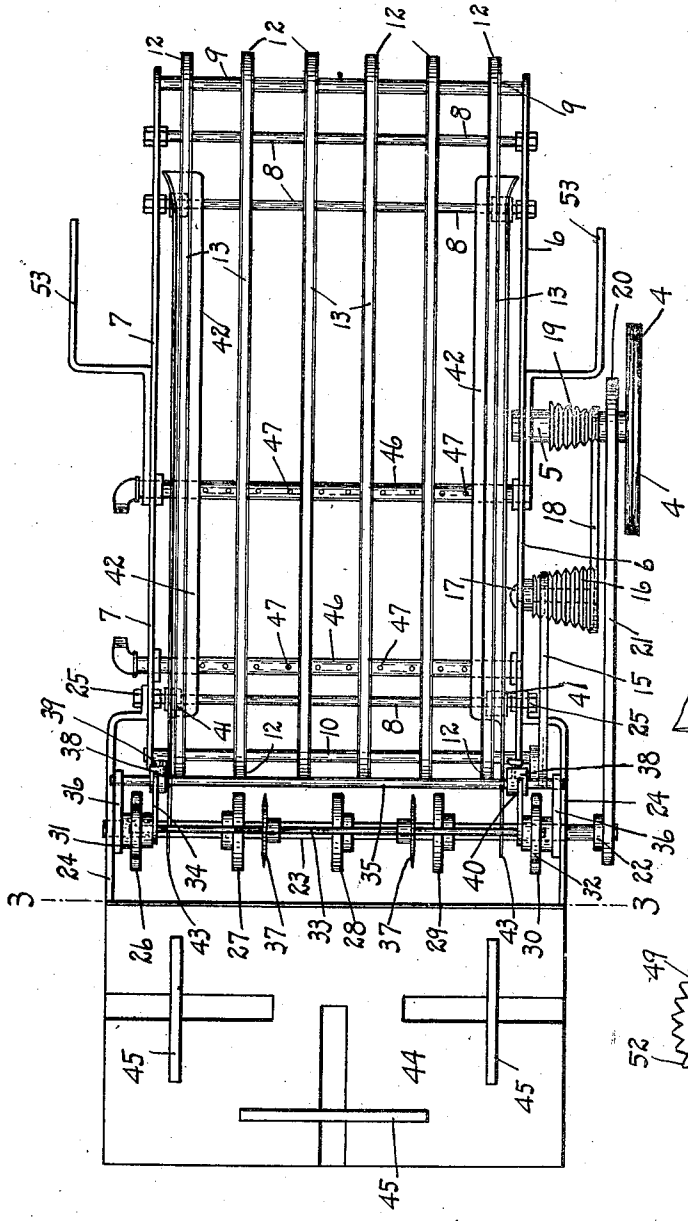


FIG. 1.

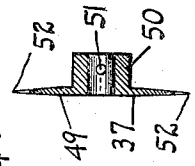


FIG. 10.

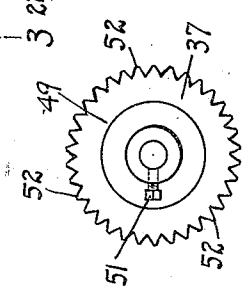


FIG. 9.

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PRINTED SHEET DELIVERY ATTACHMENT FOR PRINTING PRESSES

Filed Feb. 15. 1924 3 Sheets-Sheet 2

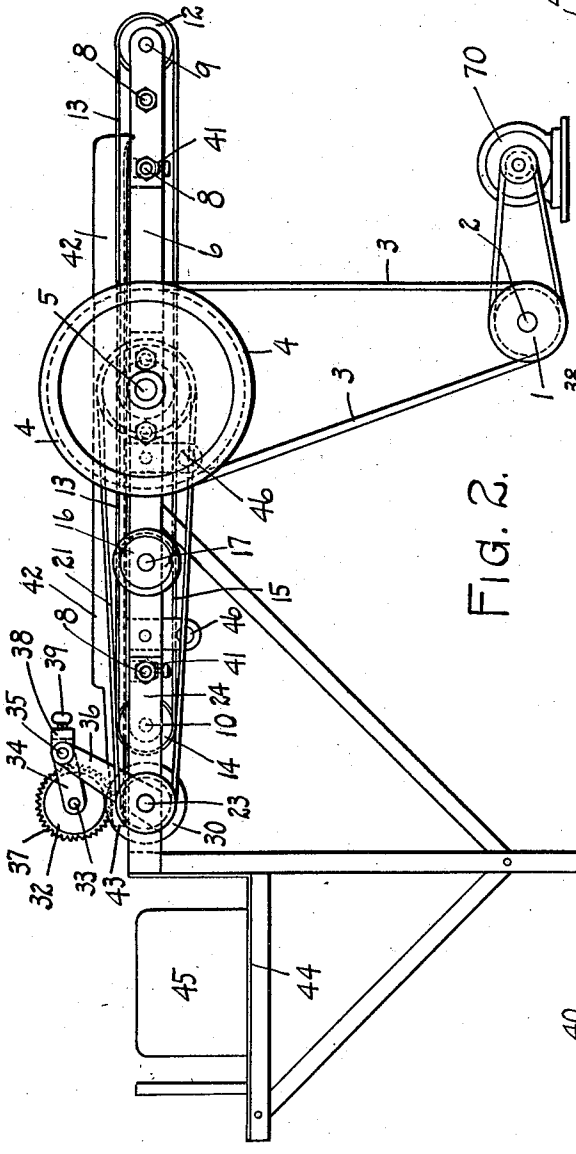


FIG. 2.

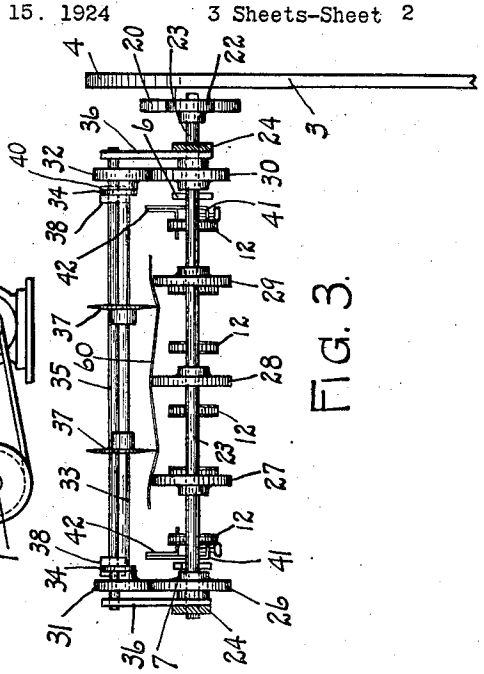


FIG. 3.

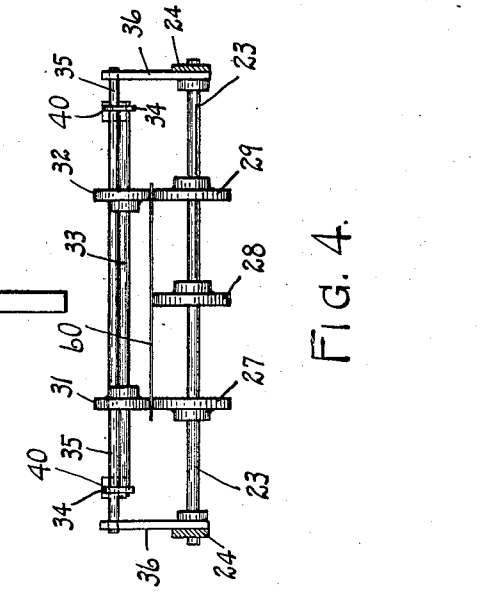


FIG. 4.

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May 10, 1927. 1,628,292

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PRINTED SHEET DELIVERY ATTACHMENT FOR PRINTING PRESSES

Filed Feb. 15. 1924 3 Sheets-Sheet 3

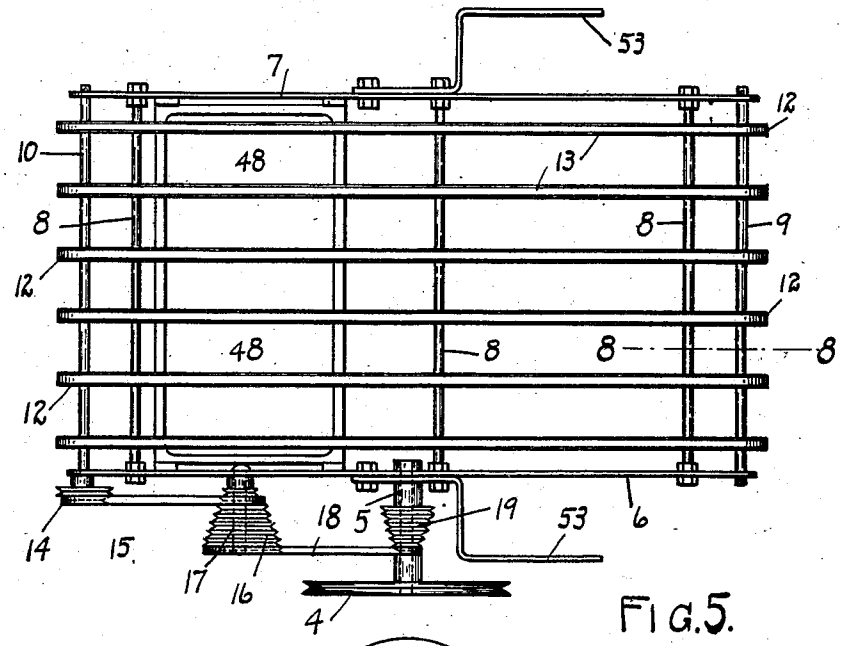


FIG. 5.

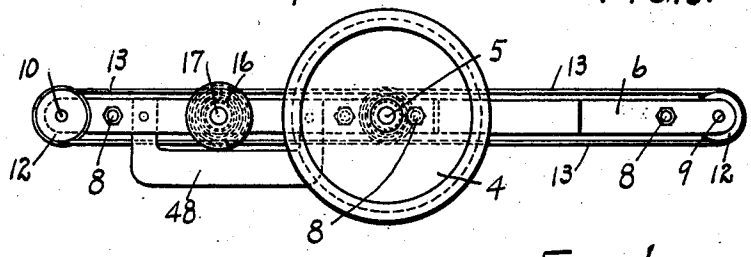


FIG. 6.

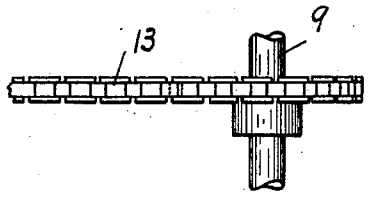


FIG. 7.

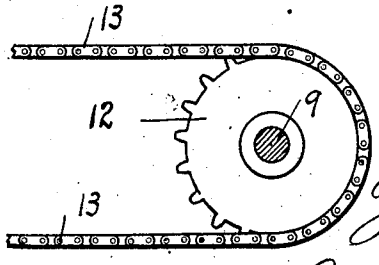


FIG. 8.

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Patented May 10, 1927. 1,628,292

UNITED STATES PATENT OFFICE.

FREDERICK J. WERMES, OF NORWOOD, OHIO, ASSIGNOR TO S & W MACHINE COMPANY, OF CINCINNATI, OHIO, A PARTNERSHIP COMPOSED OF FREDERICK J. WERMES AND ROBERT H. STELTENPOHL.

PRINTED-SHEET-DELIVERY ATTACHMENT FOR PRINTING PRESSES.

Application filed February 15, 1924. Serial No. 693,117.

The object of my invention is to provide an attachment for printing presses which can be readily attached to or removed from the printing press as occasion arises. The attachment is employed for the purpose of carrying printed sheets off of the printing press and delivering them at some point, usually to a jogger box. I use a series of conveyor belts, rolls operating in connection with said conveyor belts, drying said sheets as they are passing over said conveyor belts, and, near the point where they are to be delivered, giving to said sheets an accelerated motion in order to give to said sheets an impetus so that they will quickly fall in position at the point of delivery, say the jogger box. The conveyor belts are made of metal to keep the heat from injuring them, and for the purpose of keeping same in a normal condition at all times.

The operation above described is used in connection with printed sheets which have a margin on each side thereof. When no margin is present on the printed sheets, and especially when they are heavily printed, I employ a star wheel mechanism, having small points which assist in feeding the printed sheets, at the point where the accelerated motion is desired, the points being so small that none or very little impression will be made upon the inked sheet, as to disfigure or smear the same.

The advantages and features of my invention will readily become apparent from reading the following specification.

It will be understood that my device obviates the necessity of racking the paper or slip-sheeting the same.

In the accompanying drawing, forming a part of this specification:

Fig. 1, is a plan view of the attachment,

Fig. 2, is a side view thereof,

Fig. 3, is a front view, taken from line 3—3 of Fig. 1,

Fig. 4, is a front view of the means for marginal delivery,

Fig. 5, is a plan view of the delivery means, leaving off certain parts,

Fig. 6, is a side view of Fig. 5,

Fig. 7, is a detail plan view of one form of the chains or conveyor belts used,

Fig. 8, is a side view of Fig. 7,

Fig. 9, is a view in detail of the star wheel, and

Fig. 10, is a central section through Fig. 9.

The attachment is used as before stated, in connection with printing presses and carries off the printed sheet to a delivery point; the printing press not being shown, except the drive wheel 1, mounted on a shaft 2 of the said printing press. A belt 3 leads from pulley 1 to the large pulley 4, mounted on a stud shaft 5, which is mounted in a frame made up of sides 6 and 7, and stay bars 8.

At the front of the attachment, mounted in frames 6 and 7, I provide a pulley shaft 9 and at the rear a pulley shaft 10.

Securely mounted to these shafts 9 and 10 are the sprocket wheels 12; these sprocket wheels engage with the sprocket chains (conveyor chains) 13, which pass over the said sprocket wheels 12.

The pulley shaft 10 is revolved by means of the belt pulley 14 which is securely mounted thereon, a belt 15 passing over pulley 14, and adjustable pulley 16, which pulley is mounted on a shaft 17, mounted in side frame 6. A belt 18 also passes over the adjustable cone pulley 16 and another cone pulley 19; this cone pulley 19 is mounted on the shaft 5. It will be seen that when the belt 3 is put into operation by the pulley 1, the pulleys 4 and 19 being integral, will operate the belt 18, which in turn operates the belt 15 through medium of pulley 16, the belt 15 then revolving the pulley 14, which is securely mounted to the shaft 10, will in turn revolve said shaft, causing the conveyor chains 13 to operate over the sprocket wheels 12. By this means the conveyor belts are operated and forced to travel like an endless belt, carrying the printed sheets, which are deposited upon them, to their destination.

On the shaft 5, I mount a pulley 20 over which passes a belt 21, which belt also passes over the pulley 22, which is securely mounted on a shaft 23. This shaft has its bearings in the side extending arms 24 which are fastened at the points 25 to the side frames 6 and 7.

Adjustably mounted on shaft 23 are the feed rolls 26, 27, 28, 29 and 30. The feed rolls 26 and 30 engage with upper feed rolls 31 and 32 which impart motion through frictional contact. These rolls 31 and 32 are adjustably mounted on a shaft 33, which is journaled in one end of the links 34, the

other ends of said links 34 being adjustably mounted on the shaft 35; this shaft is mounted in the bearing plates 36 which are secured to the side extending arms 24 (see particularly Figs. 1 and 2).

Adjustably mounted on the shaft 33, I provide the star feed wheels 37. This adjustment is of a lateral nature in order to cover various widths of printed sheets. The links 34 being pivotally mounted on the shaft 35 allows an up and down motion to accommodate the thickness of the paper. In order to adjust the links 34 laterally, I provide an adjusting clamp 38 and thumb screw 39. By operating screw 39 the clamp can be loosened or tightened and the links 34 can thus be moved to any position desired and held there by reason of slot 40 in the clamp.

If the star wheels 37 are not needed, they may be moved over out of the way by removing them from the attachment and when needed again they can be put back into position on account of their adjustability on shaft 33.

On the tie bars 8, I mount adjustable brackets 41, which are fastened to the side guides 42, the guides being formed angular in shape and have forwardly extending fingers 43 to guide the paper to its limit of travel, at which time the sheets fall on the table 44 in the jogger box 45.

The lower feed roll 26 engages the roll 31, and the roll 30 engages the roll 32, the rolls 26 and 30 being the drivers and the rolls 31 and 32 being driven.

I provide a number of heaters, in the present instance, two are shown. In the present instance they are made up of a tube section of pipe 46, provided with a multiplicity of holes 47 and are mounted in the side frames 6 and 7. If I desire to heat by electricity I use an electrical heating unit 48, shown in Figs. 5 and 6. The sheets of paper (printed) are dried as they pass over the heating devices.

The star wheels 37 are formed of a disc part 49 and have a hub 50 secured to the shafts 33 by set screws 51, and have at their periphery a large number of thin teeth 52, the teeth being formed of a knife-like edge, see Fig. 10, being, however, not pointed but slightly flattened on their edge. Two wings or brackets as 53 are shown for securing the attachment to the printing press.

In order to operate on margin, the rolls 31 and 32 are brought into contact with the drive rolls 27 and 29, see Fig. 4, these rolls having a flat surface face can be used when the delivery is made on the margin, the roll 28 merely acting as a supporting roll. The rolls 31 and 32 travel on the margin, but when no margin is present, then the star wheels 37 are brought into play, and they feed the sheets by contact with the prints 52.

The star wheels 37 are preferably adjusted to the inside of the lower rolls 27 and 29, which allows the paper to buckle or wave as the star wheel teeth pass downwardly and draw the paper over the lower rolls, see Fig. 3.

The printed sheet is marked 60, and in Fig. 4, it is shown marginally fed, and in Fig. 3, where no margin is present said sheet 60 is being fed by the star wheels 37 and it will be seen in this figure that the printed sheet 60 is somewhat waved or buckled, as heretofore stated, to give a proper contact for the star wheels with the printed sheets.

Through the system of cone pulleys, belts, and different diameter of pulleys, I am enabled to operate the conveyor chain at any speed required, and to increase or diminish the same according to the size of the sheet which is being printed, and through this means I am also enabled to speed the shaft which carries the feed rolls and the star wheels to a greater or less extent, and to operate the same faster than the sheets are conveyed in order to quickly precipitate said sheets into the jogger box or other suitable point of delivery.

The printing press to which this attachment is preferably applied, is, as before stated, one which has a constantly operating shaft 2 with a pulley 1 thereon, as this shaft and pulley continue to operate when this printing press automatically stops or is manually stopped until all the sheets which have been printed, before stoppage, will be delivered properly, thus preventing the waste of any of the printed matter and preventing the same from taking fire by reason of any stoppage of the conveyors, thus saving the printed sheets and preventing loss.

If this attachment is attached to a printing press of another character, I may use a small motor to run and operate the same, and then continue to operate the same after the printing press has stopped, or, if desired, during the operation of the press, just as I see fit.

When the attachment is operated separately and independently of the printing press, or is operated temporarily when the printing press for any reason stops, I provide a motor 70 as shown in Fig. 2.

The construction and form herein shown is a preferred way of making my attachment, but I may deviate therefrom and have the construction to some extent and may also alter the same without departing from the principle of the invention, when attached to a printing press of a different construction than the one to which it may be applied.

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

1. In an attachment for printing presses of the character described, means for con-

veying printed sheets off of a printing press, said sheets having an unprinted margin at each side, said conveying means operating at a given speed in combination with said wheels for engaging said sheets on said margin, said feed means operating at a greater rate of speed to precipitate said sheets to a given point.

2. In an attachment for printing presses of the character described, means for conveying at a given speed, printed sheets from a printing press, said printed sheets being without margins at the sides, in combination with means for lightly engaging the printed face of said sheets to move and precipitate them to a delivery point, the latter means operating at a greater rate of speed than the first-mentioned conveying means.

3. In an attachment for printing presses of the character described, means for conveying printed sheets from a printing press at a predetermined rate of speed in combination with means for further feeding said printed sheets at an accelerated rate of speed to a given point, and means for regulating said speeds to a lesser or greater rate.

4. In an attachment for printing presses of the character described, a conveying means consisting of a number of metal conveyor belts, sprocket wheels, said conveyor belts passing over said sprocket wheels, and means for operating said sprocket wheels, and conveyors, said conveyors carrying the printed sheets off of the printing press to a designated point of delivery, in combination with feed rolls and star wheels, feed rolls for operating upon the margin of printed sheets containing a margin and star wheels for operating upon the printed sheets having no margin, said feed rolls and star wheels operating at a greater speed than the conveyors.

5. In an attachment for printing presses of the character described, means for conveying printed sheets off of a printing press at a given speed, and means for receiving said printed sheets and feeding them at a faster rate of speed in order to precipitate them for final delivery, said last-mentioned means consisting of feed rolls and star wheel mechanism, and means for regulating said last-named mechanism for varying widths of printed sheets.

6. In an attachment for printing presses of the character described, means for conveying printed sheets off of a printing press at a given speed, and means for receiving said printed sheets and feeding them at a faster rate of speed in order to precipitate them for final delivery, said last-mentioned means consisting of feed rolls and star wheel mechanism, and means for regulating said last-named mechanism for varying widths of printed sheets, and means for operating said attachment through the medium of the printing press or independently.

In testimony whereof, I affix my signature at Cincinnati, Ohio, this 6th day of February, 1924.

FREDERICK J. WERMES.