

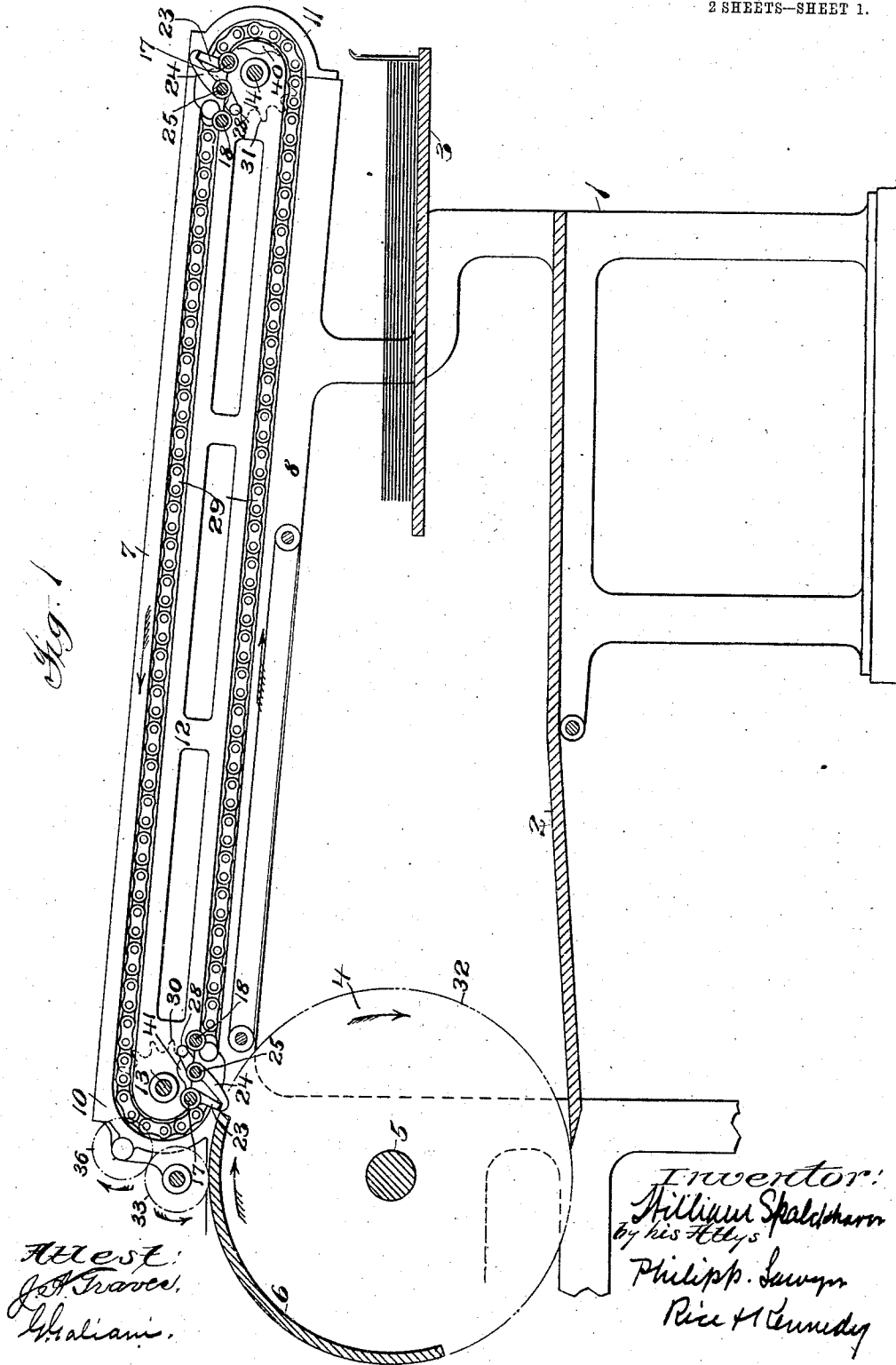
No. 851,184.

PATENTED APR. 23, 1907.

W. SPALCKHAVER.
DELIVERY MECHANISM.

APPLICATION FILED JAN. 27, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Attest:
J. A. Graves.
Italiani,

Inventor.
William Speckharn
Philipps. Sawyer. Rice & Kennedy

UNITED STATES PATENT OFFICE.

WILLIAM SPALCKHAVER, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT HOE,
OF NEW YORK, N. Y.

DELIVERY MECHANISM.

No. 851,184.

Specification of Letters Patent.

Patented April 23, 1907.

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To all whom it may concern:

Be it known that I, WILLIAM SPALCKHAVER, a citizen of the United States, residing at New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Delivery Mechanisms, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in delivery mechanisms.

In delivery mechanisms, and more especially in that class of delivery mechanisms which are used in connection with printing machines for taking sheets from the cylinders, there has been employed a plurality of gripper mechanisms, said mechanisms being supported on and operated by flexible drivers, such, for instance, as chains. These chains operated to bring the gripper mechanisms successively to the sheet taking point and after the sheets were taken, to carry them on to the delivery point. These devices are objectionable, however, because the chains operated not only to cause the movement of the gripper mechanisms but they also supported them which required that the chains be made large and heavy in order to carry the weight of the gripper mechanisms. Furthermore, the weight of the gripper mechanisms caused the chains to sag, so that difficulty was experienced in causing the gripper mechanisms to move in a true path. Furthermore, a jumping movement was given the chains in passing over the sprockets which gave an undue amount of vibration to the gripper mechanisms. Further, also, the weight of the gripper mechanisms on the chains caused them to stretch, so that constant adjustment of the chains was necessary.

The present invention has for its object to produce an improved delivery mechanism in which one or a plurality of gripper mechanisms may be given a revolving movement, the mechanisms being supported independently of the driver by which their movement is effected.

With this and other objects in view, the invention consists in certain constructions and in certain parts, improvements and combinations as will be hereinafter fully described and specifically pointed out in the claims hereunto appended.

Referring to the accompanying drawings—

Figure 1 illustrates diagrammatically in a sectional side elevation so much of a printing machine as is necessary to an understanding of the invention, said machine having the improved delivery mechanism attached thereto. Fig. 2 is a detail plan view on an enlarged scale, and Fig. 3 is a detail side elevation, partly in section, on an enlarged scale.

Referring to the drawings, in the particular machine selected to illustrate the invention, 1 indicates one of a pair of side frames which may be of any suitable configuration, the other side frame being a duplicate of the one illustrated and being omitted from the drawings in the interest of clearness. These side frames, in the particular construction shown, serve to support a sheet feeding table 2, and may also, if desired, serve to support a sheet receiving table 3.

A cylinder of the printing couple is indicated at 4, this cylinder being mounted on a shaft 5 suitably journaled in the side frames. The cylinder is provided with the usual sheet carrying portion 6. The parts so far described are or may be of any usual construction.

The improved delivery mechanism which forms the subject of the invention will include a suitable guide and, in the best constructions, this guide will be curved so as to impart a revolving movement to the sheet taking mechanisms to be hereinafter referred to. In the best constructions, furthermore, this guide will consist of two members, one of which is mounted on each side of the machine, but inasmuch as these members are duplicates, only one of them is shown. The guide may be constructed and mounted in any desired manner. In the particular machine illustrated, the side frames have formed in one piece therewith, or connected thereto in any suitable manner, upper and lower members 7 and 8, these members being spaced apart as shown and being connected at one end by an integral cap piece 10 and at the other end by a removable cap piece 11, which may be bolted or otherwise secured to the members. In the space or recess between these members 7 and 8 is located an intermediate piece 12, which, in the particular construction shown, is generally elliptical in shape. This piece may be supported in any desired manner. As shown, it is supported

on bars or rods 13 and 14 which extend across the machine from side to side. Any suitable means may be employed for supporting these rods or bars 13, 14. In the particular construction illustrated, they are supported in bearings 15 which are carried on brackets 16 extending from the side frames, one of these brackets being clearly illustrated in Fig. 2. The space between the members 7 and 8 and the intermediate member 12 forms, as will be readily understood, a curved guide or pathway.

The sheet taking devices will be mounted on a carriage, the construction of which may be varied. In the particular machine illustrated, two of these carriages are employed, but the number may, of course, be varied. In the construction illustrated, these carriages consist of cross rods 17 and 18 connected by end bars 19. The construction will be such that each carriage will be supported at at least two points on each of the guide members, this forming a very satisfactory construction and one in which the carriages are not liable to swing or rock during their movement or during the time when the grippers are operated. In the best constructions and as shown, the carriages will be supported on the guide members by rollers. In the machine illustrated, studs 20, 21 project from each of the end bars, these studs being provided with rollers 22, there being a pair of rollers operating in connection with each of the guide members before referred to.

In the particular construction shown, the stationary jaws 23 of the grippers are mounted on the rod 17 and the movable jaws 24 are mounted on a shaft 25 which is journaled in the bars 19. A torsion spring 26 may, as is usual, be employed to hold the grippers closed, and the shaft, or shafts 25, when as will ordinarily be the case a plurality of gripper carriages are employed, will be provided with rock arms 27 carrying the usual rollers 28 which operate in connection with the devices for opening the grippers. The guide for the gripper carriages consisting as before indicated of two members, one on each side of the machine, it will be seen that the gripper carriages will be entirely supported thereby and that their movement will be controlled by the guide.

The mechanism for propelling the gripper carriages along the guideway before described may be widely varied, but will, in the best constructions, include a flexible driver. In the particular construction shown, this driver consists of a pair of chains 29, only one, however, of these chains being shown, as the chains and the construction for mounting and operating them are duplicated on each side of the machine. The construction for mounting and operating the chains may be varied within wide limits. As shown, each chain is mounted on a pair

of sprockets 30, 31, these sprockets being supported on the cross rods 13, 14 before referred to. The driving mechanism for the sprockets may be of any suitable character, and the power for driving them may be derived from any suitable source. As shown, the cylinder 4 is provided with a gear 32 which imparts motion to a gear 33 mounted on a cross shaft 34 suitably supported in the frame. This cross shaft 34 carries on each of its ends a gear 35, only one of these gears being shown. These gears 35 mesh with intermediates 36 which in turn mesh with gears 37, said gears being bolted or secured in any other suitable manner to the sprockets 30.

The driving connections between the flexible drivers and the gripper carriage or carriages, when more than one is employed, may be of any suitable construction. As shown, the chains are provided with socket pieces 38, which socket pieces, in the particular construction illustrated, form special links in the chains. These socket pieces are engaged by pins 39 which, in the particular construction shown, are formed as extensions of the studs 21.

The means for opening the grippers at the sheet taking point and opening them again at the sheet delivery point may be of any suitable construction. As shown, stationary cams 40 and 41 are employed for this purpose, these cams being located so as to strike the rollers 28 and the arms 27. After the cams have opened the grippers to take the sheet, the grippers are closed, in the particular construction illustrated, by the springs 26.

It will be readily understood that in the construction as described the gripper carriage or carriages, where more than one is employed, are entirely supported in the guideway and their movement is controlled thereby. The flexible driver is, therefore, entirely relieved of all duty except that of propelling the gripper carriages along the guideway, so that it may be made light. Furthermore, all the difficulties which have been referred to caused by the gripper mechanisms being carried by the flexible driver are avoided, a true and even movement of the gripper carriages throughout their path being secured.

While the construction described embodies the invention in its best form, it will be understood that changes and variations may be made therein without departing from the invention.

It is to be further understood that while constructions embodying the invention are particularly adapted for use in connection with printing machines they may be employed in other relations.

What is claimed is:—

1. In a delivery mechanism, the combination with a carriage, of a guide comprising

two parallel members constructed to impart a revolving movement to the carriage, means for supporting said carriage at at least two points on each guide member, and a flexible driver for propelling the carriage around the guide.

2. In a delivery mechanism, the combination with a carriage, of a curved guide consisting of two parallel members constructed to impart a revolving movement to the guide, rollers for supporting the carriage on the guide members, there being at least two rollers for each guide member, a gripper mechanism mounted on the carriage, and a flexible driver for propelling the carriage around the guide.

3. In a delivery mechanism, the combination with a carriage comprising cross bars and end bars, of a curved guide comprising two parallel members constructed to impart a revolving movement to the carriage, a pair of rollers running on each guide member, connections between each pair of rollers and the end bar, a gripper mechanism supported on the carriage, and a flexible driver for propelling the carriage around the guide.

4. In a delivery mechanism, the combination with a carriage comprising a pair of cross bars and end bars, gripper members

mounted on the carriage, a rock shaft mounted on the end bars and carrying cooperating gripper members, means for operating the shaft, a curved guide comprising a pair of parallel members constructed to impart a revolving movement to the carriage, means for supporting the carriage on the guide, and a flexible driver for propelling the carriage around the guide.

5. In a delivery mechanism, the combination with a carriage comprising a pair of cross bars and end bars, gripper members mounted on the carriage, a rock shaft mounted on the end bars and carrying cooperating gripper members, means for operating the shaft, a curved guide comprising a pair of parallel members constructed to impart a revolving movement to the carriage, two pairs of rollers for supporting the carriage on the guide, and a flexible driver for propelling the carriage around the guide.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

WILLIAM SPALCKHAVER.

Witnesses:

F. W. H. CRANE,
LOUIS ROEHM.