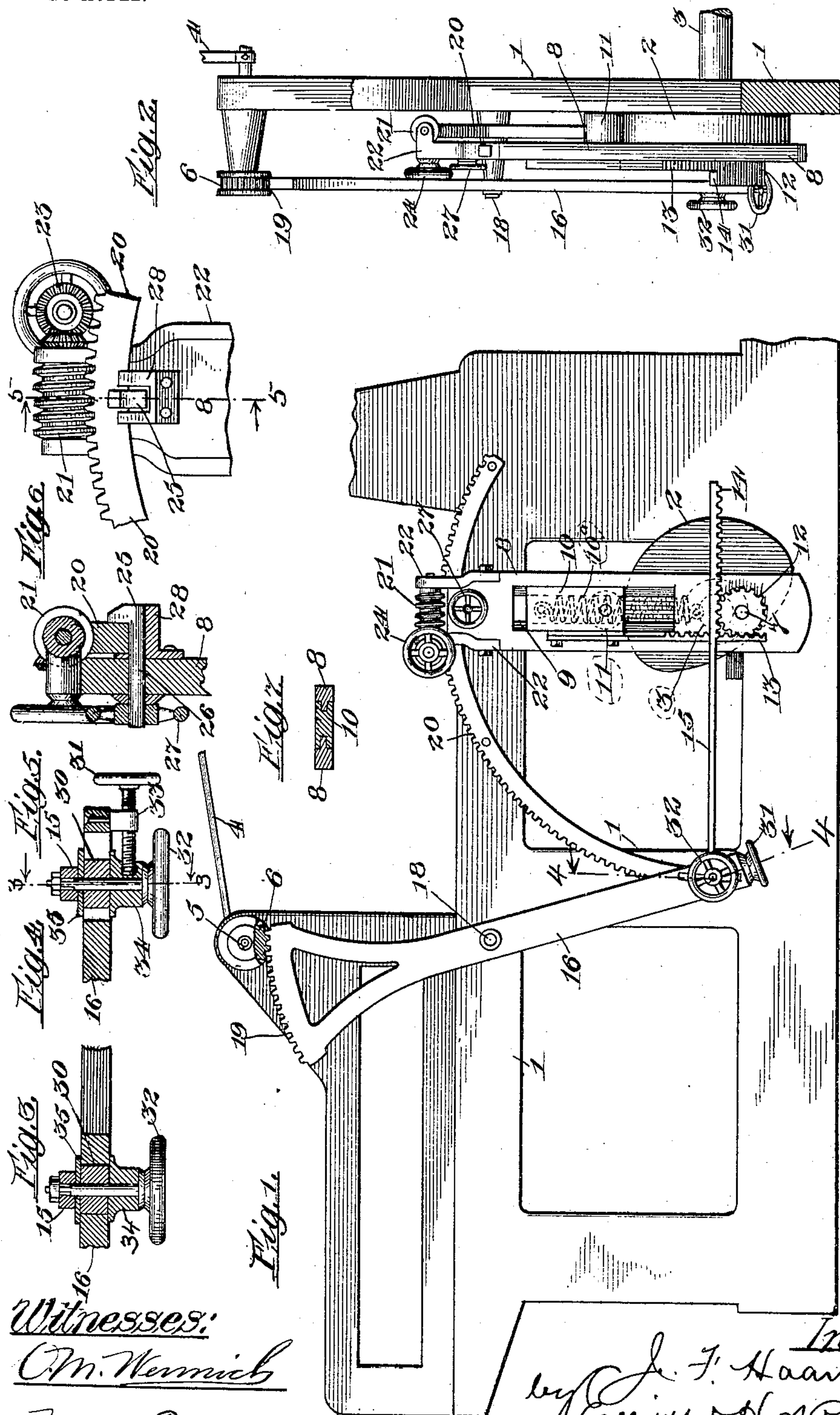


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DELIVERY MECHANISM FOR PRINTING PRESSES.

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NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

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DELIVERY MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 768,850, dated August 30, 1904.

Application filed September 18, 1903. Serial No. 173,643. (No model.)

To all whom it may concern:

Be it known that I, JOHN FRANK HAAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
 5 invented certain new and useful Improvements in Delivery Mechanisms for Printing-Presses of which the following is a full, clear, and exact specification.

My invention relates to that type of delivery
 10 mechanisms for printing-presses in which the fly-fingers are caused to undergo their oscillatory motion by a cam. It is desirable that the time of starting of the fly-fingers from their initial or receiving position be varied
 15 with relation to the operation of the printing mechanism in order that sheets of various lengths may all be placed by the delivery-tapes or other means at substantially the same position on the fly-fingers.

20 My invention has for its primary object to provide improved and efficient means whereby this result may be accomplished during the operation of the press without necessarily adjusting the cam, a further object of my invention being to provide improved means for
 25 varying the throw or extent of movement of the fly-fingers without varying their initial or starting position.

30 With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference
 35 to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of a part of a printing-press provided with my improvements. Fig. 2 is an end elevation thereof looking from the right in Fig.
 40 1. Fig. 3 is an enlarged detail section taken on the line 3 3, Fig. 4. Fig. 4 is a similar section taken on the line 4 4, Fig. 1. Fig. 5 is a vertical detail cross-section taken on the
 45 line 5 5, Fig. 6. Fig. 6 is an enlarged detail view of the worm-gear mechanism, hereinafter described, looking from the opposite side of that presented in Fig. 1; and Fig. 7 is a sectional view of the slide and standard.

50 1 is the frame of the printing-press of any

suitable form; 2, the cam which operates the fly-fingers, mounted upon a shaft 3, as usual in the frame of the press. 4 represents the fly-fingers, 5 the fly-finger shaft, and 6 the pinion on said shaft, by which it is oscillated
 55 or rotated back and forth, all of which may be of the usual or any suitable construction.

Pivoted at the side of the frame 1 in any suitable way, but preferably by means of the shaft 3, is a standard 8, having a slotted guide-
 60 way 9, in which is arranged a vertically-movable slide 10, which carries an antifriction-roller 11, resting continually upon the periphery of cam 2 and which causes the slide 10 to
 65 rise and fall as the cam rotates, the dwell of the cam being so positioned that the fly-fingers 4 will remain at rest at the proper point in their arc of movement. Mounted upon the side of
 70 standard 8 by means of a pivot 7 is a pinion 12, and with this pinion engages a rack-bar 13, secured to the slide 10 in any suitable way. The pinion 12 is of sufficient length to
 75 accommodate and engage with a second rack-bar 14, arranged at an angle to the rack-bar 13 and engaging with the upper side of the pinion 12, whose pitch diameter passes substantially through the center of the shaft 3,
 80 so that should the standard 8 be oscillated or moved on its pivot 3 the pinion will merely walk along the rack-bar 14 without moving it. The rack-bar 14 is connected by rod 15
 85 to the lower end of a lever 16, which is fulcrumed at 18 to the frame 1 or any other suitable support and carries at its upper end a segment-rack 19, engaging with pinion 6.
 90 It will thus be seen that as the slide 10 rises and falls, due to the conjoint action of the cam 2 and the usual spring for keeping roller 11 in contact with the cam, (indicated in dotted lines at 10^a), the pinion 12 will be alter-
 95 nately rotated in opposite directions and the lever 16 thereby oscillated, causing the fly-fingers 4 to deliver the sheet from the tapes to the piling-table, and the time of starting from their initial or receiving position will
 100 depend upon the position of the dwell of cam 2 with relation to the roller 11. Hence by oscillating the standard 8 on its pivot 3, and thereby changing the relative positions of the dwell of the cam and the roller 11, the start-

ing time of the fly-fingers may be gaged to a nicety. As a convenient and efficient means of accomplishing this adjustment of the standard 8 and at the same time holding the standard rigidly in position against undue oscillation I provide a segment-rack 20, which is rigidly secured to or formed on the frame 1 or any other suitable support and with which engages a worm 21, journaled in suitable brackets 22 on the sides of the standard 8 and having miter-gear connection 23 with a hand-wheel 24, whereby the worm 21 may be conveniently rotated. For locking the standard 8 rigidly with the rack 20 as a further safeguard against accidental oscillation or vibration a clamp 25 is provided and has a stem 26 passing through standard 8 and engaging in a nut in the form of a hand-wheel 27, arranged at the front side of the standard, so that the clamp 25 may be readily released when desired.

28 is a guide secured to the standard 8 and engaging the rack 20 for maintaining the proper relation of the standard and its connected parts with the rack 20 when the clamp 25 is released or in the event the clamp should work loose.

In order that the throw of the fly-fingers may be varied at will without changing or varying their starting position, the lower end of the lever 16 is provided with a curved slot 29, which is struck on an arc from the center of the shaft 3 at the time when the fly-fingers are at their initial or starting position, and in this slot works a block or slide 30, to which the rod 15 is pivoted and which block is susceptible of adjustment by a hand-screw 31, journaled on the lower end of lever 16, the block 30 being clamped at the desired adjustment by a second hand-screw 32. It will thus be seen that if the block 30 be raised or lowered in the slot 29 for increasing or decreasing the throw of lever 16 at the time when the fly-fingers are in their starting position the length of the lever will be altered without disturbing the fingers. The screw 31 is threaded in a nut 33, swiveled on collar 34, pivoted on stem of screw 32, so that screw 31 may oscillate to follow the movement of slide 30 in slot 29, and the inner end of screw 32 is threaded in a clamping-nut 35 and also constitutes the pivot for rod 15.

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

1. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, means bearing against said cam for actuating said fingers, and means for adjusting said first means with relation to the cam for varying the time of starting of the fly-fingers.

2. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a member movable in one direction by said cam, means for adjusting said member transversely

of that direction for varying its relation to the cam, and means for imparting the said movement of said member to the fly-fingers.

3. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a member movable in one direction by said cam, a support for said member having a pivotal relation to said cam whereby it may be adjusted, means for holding said support at its adjustment, and means for imparting the movement of said member to the fly-fingers.

4. In a sheet-delivery mechanism, the combination of the fly-fingers, a fly-finger cam, a member movable by said cam, a support for said member movable concentrically with the axis of said cam, and means for imparting the movement of said member to the fly-fingers.

5. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a member movable by said cam, a support for said member movable concentrically with said cam, a worm-gear mechanism for thus moving said support, and means for imparting the movement of said member to the fly-fingers.

6. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a pivoted standard, a slide on said standard movable by said cam, and means for imparting the motion of said slide to the fly-fingers.

7. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a rack-bar movable by said cam, a pinion engaged by said rack-bar, and means for imparting the rotation of said pinion to the fly-fingers.

8. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a rack-bar movable by said cam, a pinion engaged by said rack-bar, a second rack-bar engaging said pinion, a lever connected to said second rack-bar, and means for imparting the oscillation of said lever to the fly-fingers.

9. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a pinion, means for rotating said pinion by the action of said cam, a rack-bar engaging said pinion, a lever operatively connected with the fly-fingers and having a slot curved on an arc concentric with the cam, and means connecting said rack-bar to said lever in said slot.

10. In a sheet-delivery mechanism, the combination of the fly-fingers, a lever operatively connected with the fly-fingers for oscillating them, a reciprocatory rod for oscillating said fingers, and means connecting one end of said rod to said lever adjustable on an arc of a circle, whereby said adjustment may be effected without changing the starting position of the fly-fingers.

11. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a standard pivoted with relation to said cam, a slide on said standard movable by said cam, a rack-bar secured to said slide, a pinion engaged by said rack-bar, means for imparting the rotation of said pinion to the fly-fingers,

a segment-rack and a worm-gear connection between said standard and segment-rack.

12. In a sheet-delivery mechanism, the combination of the fly-fingers, the fly-finger cam, a standard pivoted with relation to said cam, a member on said standard movable by said cam, means for imparting the movement of said member to the fly-fingers, a segment-

rack, a worm-gear connection between said rack and standard and a clamp for securing said standard and rack together.

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Witnesses:

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