

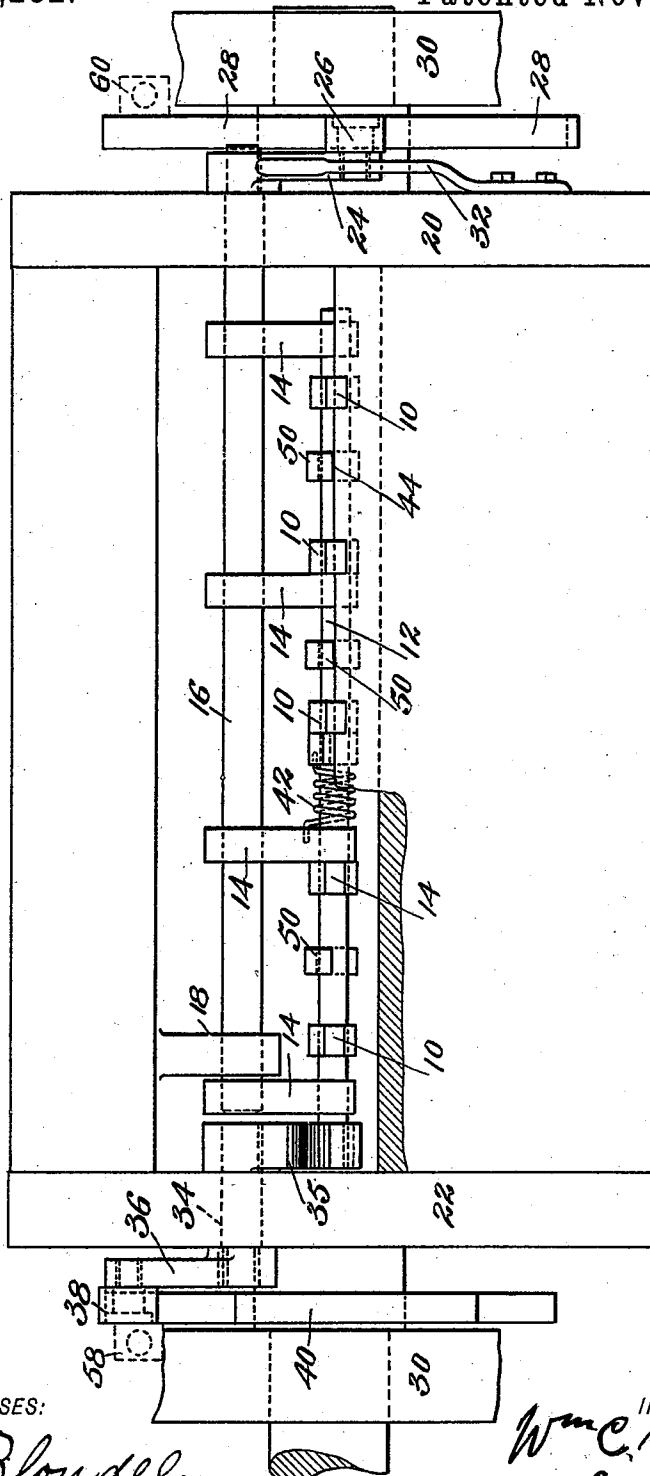
(No Model.)

3. Sheets—Sheet 1.

W. C. WENDTÉ.
GRIPPER FOR PRINTING PRESSES, &c.

No. 549,282.

Patented Nov. 5, 1895.



WITNESSES:

M. S. Blondel
H Allen

INVENTOR
Wm C. Wendt
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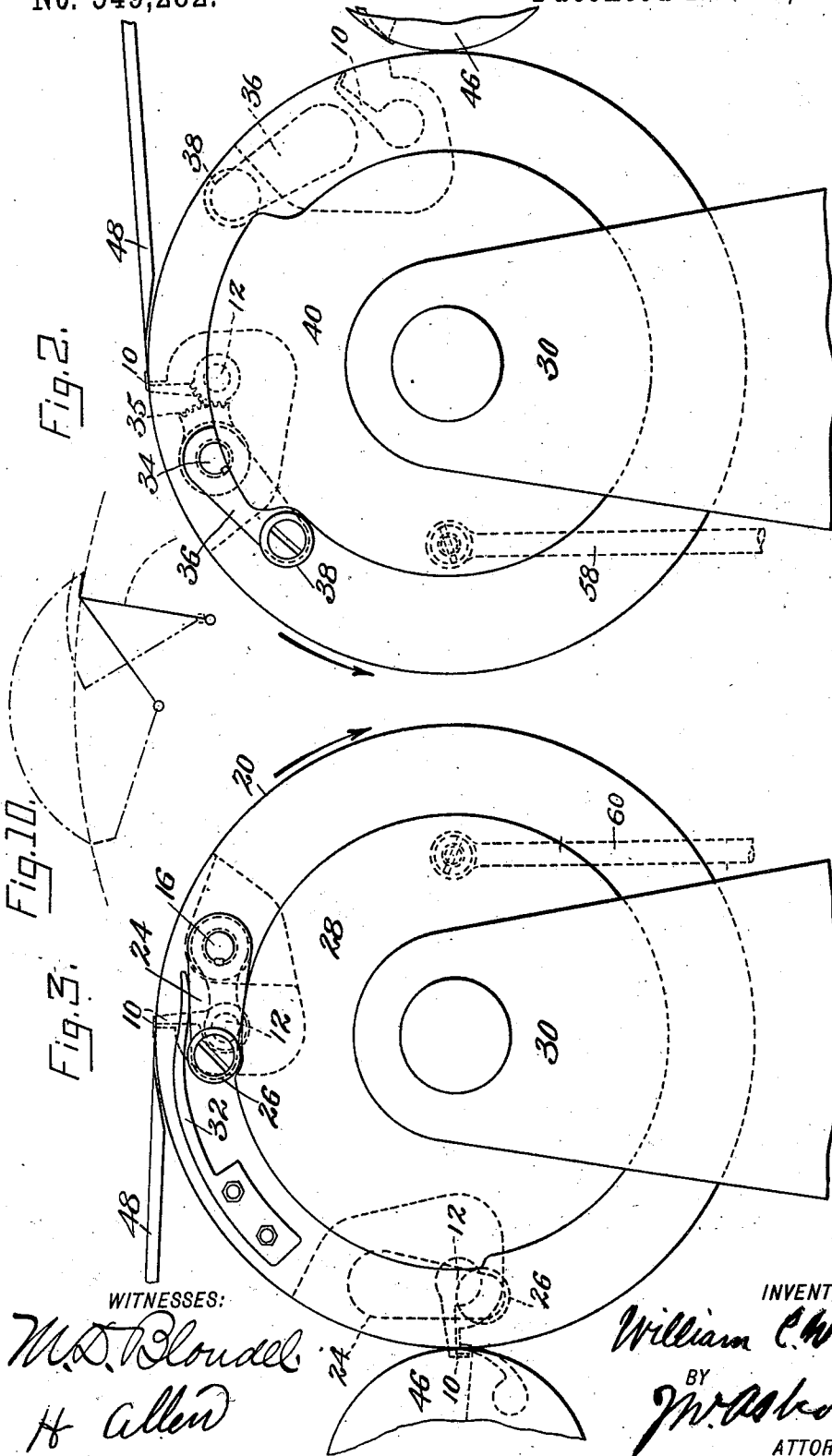
(No Model.)

3 Sheets—Sheet 2.

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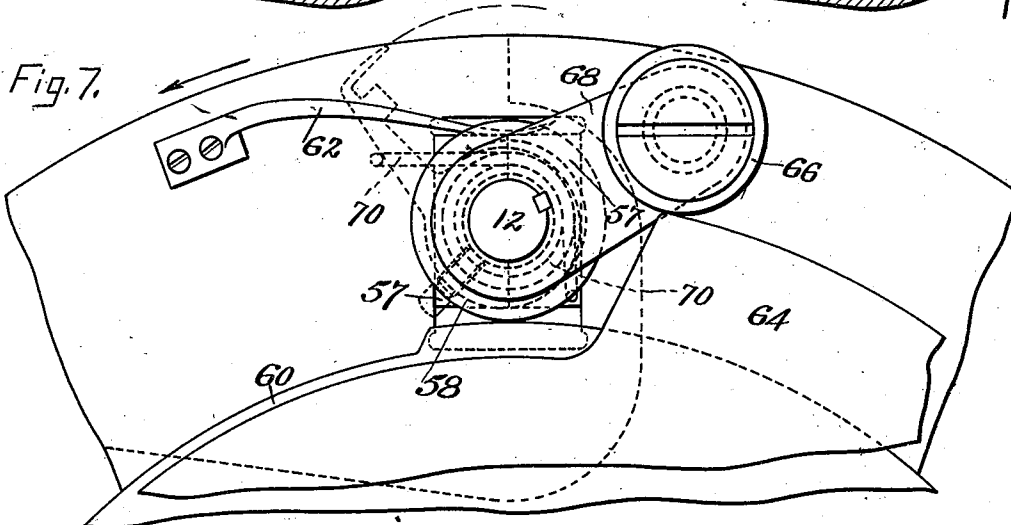
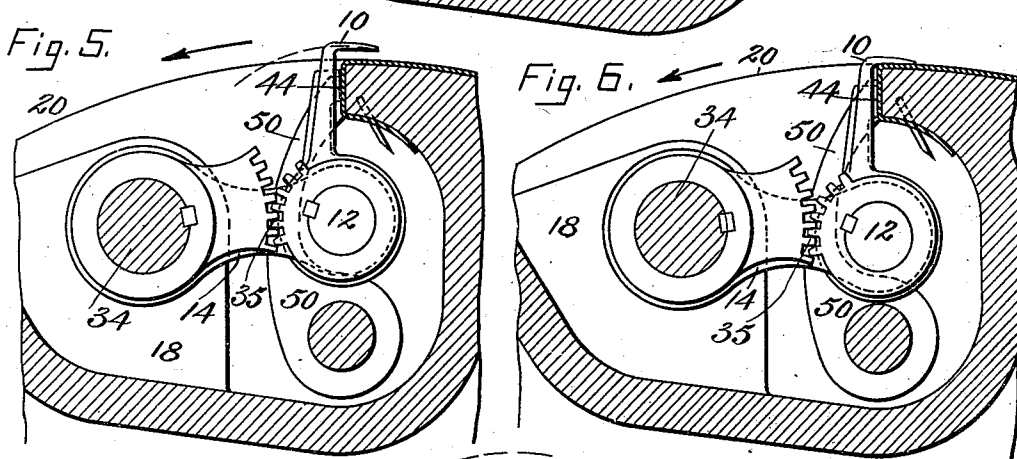
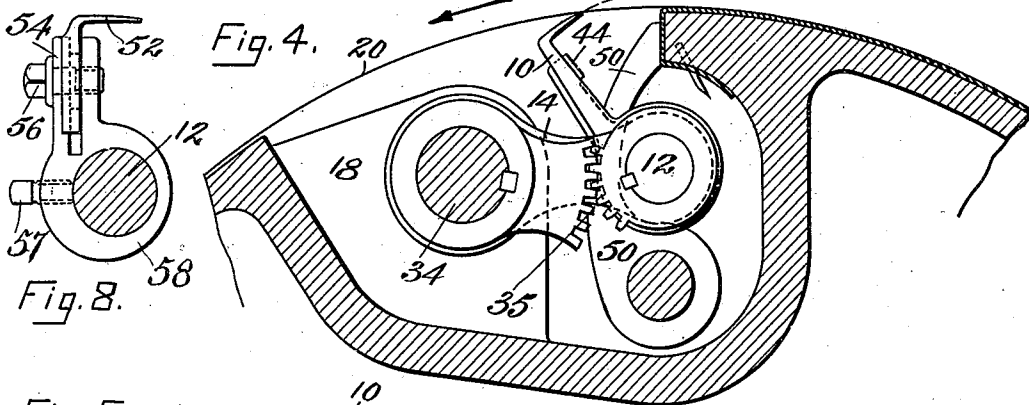
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WITNESSES:
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Fig. 9.
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UNITED STATES PATENT OFFICE.

WILLIAM C. WENDTÉ, OF BOSTON, MASSACHUSETTS.

GRIPPER FOR PRINTING-PRESSES, &c.

SPECIFICATION forming part of Letters Patent No. 549,282, dated November 5, 1895.

Application filed July 24, 1895. Serial No. 557,024. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. WENDTÉ, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Grippers for Printing-Presses and Like Machines, (Case J,) of which the following is a specification.

This invention is related to a large class of contrivances for conveying sheets of paper or of any similar thin material, and it is especially adapted for seizing and holding with precision the sheets fed to printing-machines designed to give accurate register and uniform margins.

It is known that the manner in which sheets are taken by grippers of the usual construction has often an injurious influence upon the work. This is due chiefly to the oblique manner in which the gripper-fingers strike the leading edge of the sheet, and that this obliquity is inevitable is obvious when it is remembered that the gripper-shaft must be below the cylinder-surface. In the grippers I have invented the sheet is grasped by an up-and-down movement coincident in direction with a radius of the cylinder and takes the edge of the sheet as it is presented.

In the drawings which form a part of this specification, Figure 1 is a plan view of my gripper within a cylinder-gap, together with the actuating cams and levers. Figs. 2 and 3 are elevations of the ends of the gripper-cylinder with the outside devices that control the gripper movement. Figs. 4, 5, and 6 are partial cross-sections of the same cylinder-gap, showing the gripper in different positions. Fig. 7 illustrates a modified bearing for the gripper-shaft. Fig. 8 is an adjustable gripper-finger. Fig. 9 is a sketch of the tumbling gripper in common use for purposes of comparison. Fig. 10 compares geometrically the two grippers in one gap.

In the drawings the fingers 10 are shown attached to the gripper-shaft 12. The ends of this shaft do not pass, as usual, through the ends of the gap, but are journaled in bearings in the arms 14, fast on the long rock-shaft 16, which has bearings in the lug 18 and cylinder end 20, beyond which latter it projects. Outside the end this shaft 16 is provided with the arm 24, carrying the roller 26,

which follows the face of the stationary cam 28, attached to the frame 30, while contact therewith is maintained by the strong spring 32. The result of this arrangement is to cause the shaft 16 to rock as the cylinder revolves and through the arms 14 to raise and lower the gripper-shaft 12 in a direction coincident with or parallel to a radius of the cylinder and with it the fingers 10 attached thereto.

In my invention the movement just described is that which seizes and holds the paper; but as it is also necessary that the fingers shall get out of the way and disappear below the cylinder-surface I use other devices for the accomplishment of that purpose which operate with every revolution of the cylinder. This disappearance of the fingers is brought about by throwing them back in the gap—a movement which requires the partial rotation of the gripper-shaft 12 in its bearings in the arms 14. To accomplish it, a short rock-shaft 34 is journaled in the near cylinder end 22, which is concentric, or nearly so, with the long rock-shaft 16. It carries on its inner end one member of the segment-gearing at 35, the other being on the gripper-shaft itself. Outside the short rock-shaft is provided with the arm 36 and roller 38, which latter traverse the cam 40, while the spring 42 on the gripper-shaft keeps the stop 44 on each finger up to the gripper-edge of the cylinder. In this way I bring the gripper-fingers suddenly forward at the right moment to a position over the leading edge of the sheet, and an instant before their stops strike the cylinder-edge their prompt descent upon the paper begins under the influence of the spring 32.

In Fig. 9 the old form of gripper is shown for comparison, and in Fig. 10 the old and new are represented geometrically together in the same gap—an entirely suppositious but instructive presentation of the two grippers. In this diagram both grippers are closed, as shown by full lines, dotted lines being used to indicate their positions when open and the paths described by the extreme point of each.

In the drawings, Figs. 2 and 3 are end elevations of the near and off sides of the cylinder, respectively, with the fixed cams, out-

side levers and rollers, also the strong spring 32 in Fig. 3, which closes the grippers; also, the relative positions of the same with the essential details within the gap, and with a common delivery-cylinder at 46. The feed-board from which the sheets are taken is also shown in these figures at 48.

In the three sectional Figs. 4, 5, and 6 my gripper is shown in three positions—namely, with the fingers lifted and thrown back, then with the fingers brought forward till the stop 44 has struck the cylinder, and finally after the shaft 12 has dropped and the returned ends of the fingers have seized the paper. In these figures, 50 is the clamp which holds the blanket or packing when it is bent over into the gap, the function of which is well understood.

In Fig. 8 I have shown the adjustable finger which, when desired, I have found serviceable in this construction. It consists of a steel blade 52, bent at right angles and caught in the clamp 54, which is controlled by the screw 56. These blades have a little play and are pressed down into perfect contact with their seats on the cylinder before the screws 56 are set up. For accurate adjustment as regards their length, and therefore the hold these fingers take upon the paper, they greatly surpass the older form. On the gripper-shaft 12 the collar 57, which is part of the finger-arm 54, is held by the set-screw 59 on said shaft.

In the foregoing I have represented the stationary cams 28 on the off side of the press, which determines the closing of the gripper, and 40 on the near side, which gives it the tumbling motion, as sufficient for their purpose. This is true under ordinary circumstances; but in very rapidly-running presses I secure greater promptness of action by modifying these cams as follows: In place of fixing the cams upon the frame they are put free upon the cylinder-shaft, or any bearing concentric therewith, and held in that position by the rods 58 for the near and 60 for the off cam. So held, the cams behave as before; but by connecting the lower ends of the suitably-formed rods with cams on any convenient shaft below (not shown) an impulse may be given to the tumbling or to the closing cam, as the case may be, at the moment when the roller traversing its face falls or rises, whereby the steepness may be greatly increased in effect and the cam's promptness of action enhanced to almost any extent. This will be evident when it is remembered that the effect of such a sudden vibration of the cam is made to take place at the moment when the roller is descending a steep incline will be to pull the incline from under the roller, thereby increasing its relative speed very greatly and producing an effect which would otherwise require an exceedingly abrupt projection on the cam-face. I shall call these rods "impulse-rods."

Having described my invention I wish it

to be understood that I do not restrict myself to the specific devices shown, being well aware that like results may be achieved by other means and modifications of the apparatus I have employed without departing from the principle on which my invention rests. I prefer, for instance, to make the bearing for the gripper-shaft in the arms upon an independent rock-shaft for the purpose of raising and lowering said bearings; but the gripper-shaft may be otherwise supported and the long rock-shaft itself dispensed with, as is shown in Fig. 7. In this case the gripper-shaft 12 enters radially-sliding blocks 57 in the cylinder ends 20 and 22, which furnish bearings for the same. The shaft passes through and beyond each bearing and carries at each end outside the gap a roller 58, which rests upon the cam 60, and is held down by the stiff spring 62, which corresponds in function to the spring 32 in Figs. 1 and 3. By the action of this cam the bearing-blocks 57 are thrown up and dropped again and with them the shaft and fingers on it, as in the former method, whenever it becomes necessary to release or seize the paper. In Fig. 7 the gripper-fingers 10 (shown dotted in the drawings) have just been thrown back by the cam 64, over which the roller 66 at the end of the arm is carried. This arm is fast on the gripper-shaft and vibrates the same in its bearings at the proper times. The coil-spring 70 (shown dotted as it is in the gap) keeps the stops 44 up to the cylinder edge, as before, when the fingers are above the paper ready for descent upon the edge of the sheet.

There are many advantages gained by my invention, the principal one being the up-and-down motion of the gripper-finger as it seizes or releases the paper, to which it imparts no impulse of a disturbing nature; also may be cited the very small distance beyond the cylinder-surface within which the fingers move when thrown over. Figs. 9 and 10 serve to facilitate in this regard a comparison of the new with the old construction of gripper. This, as is well known, is often a matter of the greatest importance in press-machinery of certain kinds. This gripper has been spoken of as moving radially. Practically this is always true, but of course when the shaft 12 rises and falls with its bearings, as seen best in Figs. 1 and 3, it passes through an exceedingly small arc, and the tangential part of the finger (the stop on the radial part being held in contact with the cylinder edge by the spring 42) through an arc much smaller. The versed sine of the larger of these arcs will be actually about two one-thousandths of an inch, and that amount will be the shaft's maximum departure from its true path, which may therefore in direction be spoken of as coincident with a cylinder radius or parallel thereto without any appreciable error.

In this specification when the "near" side

of a press or end of an impression-cylinder is referred to, that side or end is meant at which the feeder stands, and by the "off" side or cylinder end the side or end that is opposite to him is to be understood.

What I claim is—

1. The combination with a cylinder of a gripper shaft placed diametrically under the gripper edge of the gap; with fingers rigidly attached thereto; with means for moving said shaft to and from the gripper edge while still in the same diametric plane; and with means for oscillating it angularly thereby carrying the contact ends of the gripper fingers to and from the gripper edge; substantially as described.

2. An up-and-down gripper for printing machines consisting of a gripper-shaft in the cylinder gap journaled in radially moving bearings and provided with fingers adapted to fall upon and hold the paper; in combination and in operative connection with two cams on the press-frame, one to lift and lower said bearings, and one to rock the gripper-shaft therein and throw its fingers above and into the gap at the proper times; substantially as described.

3. An up-and-down gripper for printing machines consisting of a gripper shaft in the cylinder gap journaled in radially moving bearings and provided with fingers adapted to fall upon and hold the paper; in combination and in operative connection with two cams on the cylinder shaft, one to control the up-and-down motion of the gripper shaft bearings, and the other that of the rocking of said shaft therein; and with impulse-rods to hold and to oscillate both cams in acceleration of the specific movements which said cams give rise to; substantially as described.

4. An up and down gripper mechanism for printing presses, consisting of the following elements: a gripper shaft within the cylinder gap in combination with a parallel rock-shaft bearing arms in which the gripper shaft is journaled; with a cam fixed upon the press

frame in operative connection with and for the oscillation of the rock-shaft; with gripper fingers fast to the gripper shaft the contact ends of which are bent at right angles to the path in which the gripper shaft rises and falls; with a pair of segment gears connecting the gripper shaft and a short shaft placed concentrically with the rock-shaft; and with a second stationary cam upon the press frame by which said short shaft is controlled and oscillated and through which the gripper fingers receive their angular throw, causing them to appear above the cylinder surface and disappear below the same at the proper times; substantially as described.

5. In an up-and-down gripper mechanism a gripper finger adjustable in length, consisting of a collar and finger arm provided with a set-screw to hold it in place upon the gripper shaft; in combination with a terminal blade one end of which is adapted to fall flat upon the cylinder surface, and the other to clamp adjustably upon the finger arm; substantially as described.

6. A gripper mechanism for printing presses consisting of a number of gripper fingers, the contact ends of which are bent at right angles, in combination with and attached rigidly to a gripper shaft oscillating in bearings that rise and fall; with a cam upon the press frame to control the rise and fall of said bearings and thereby lift and drop said fingers in a line coinciding with their length and at right angles with their contact ends; with mechanism for partially rotating the gripper shaft at proper times; with a second cam on the press frame for controlling said mechanism, whereby the paper is seized and released flat by the contact ends of the fingers and the whole mechanism is withdrawn below the cylinder surface when not functionally operative; substantially as described.

WILLIAM C. WENDTÉ.

Witnesses:

SAMUEL JENNISON,
FRANCIS TODD.