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T. G. HYDE.

PRINTING MACHINE.

APPLICATION FILED OCT. 9, 1903.

NO MODEL.

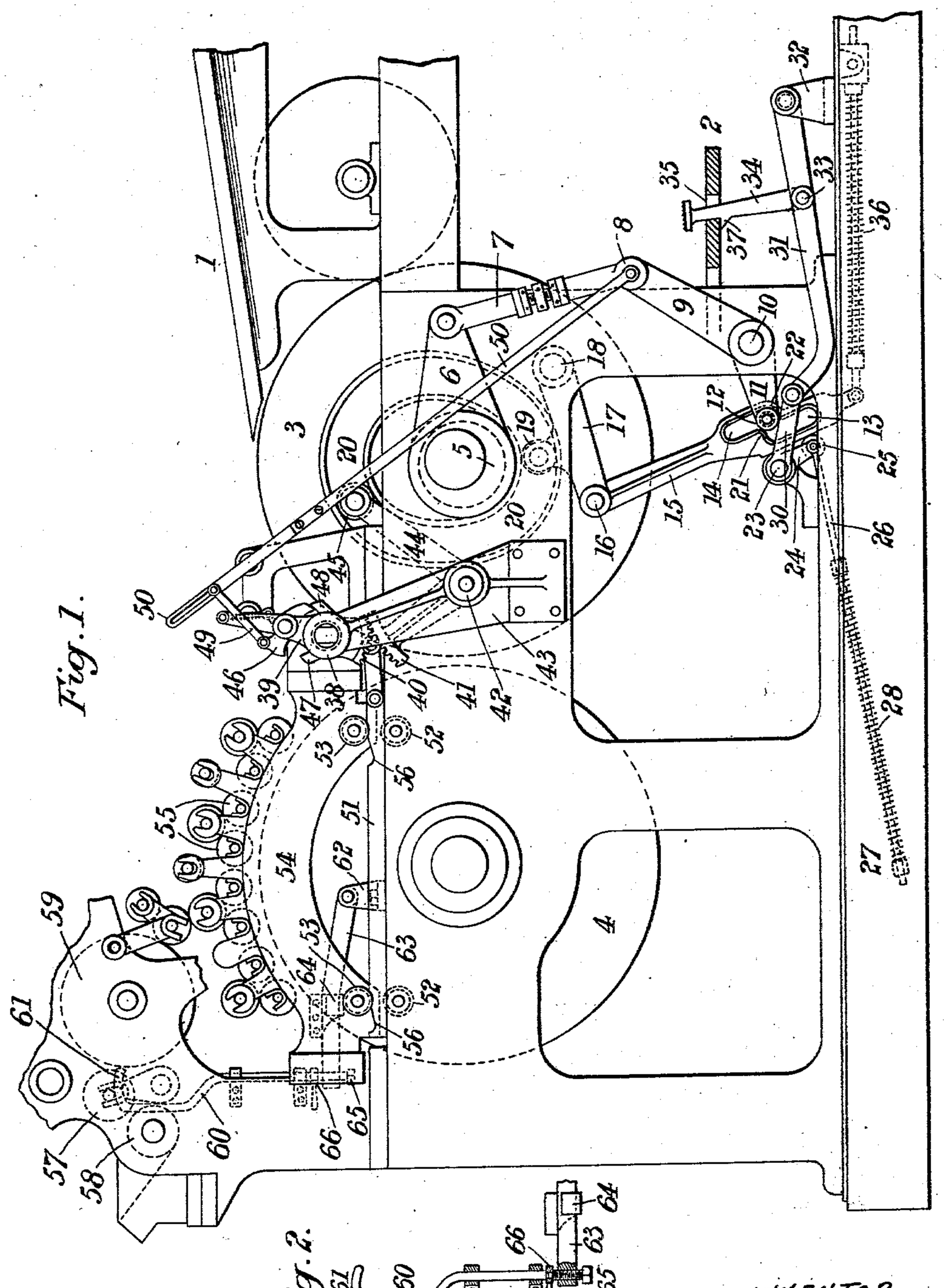

Fig. 1.

Fig. 2.

WITNESSES:
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UNITED STATES PATENT OFFICE.

THOMAS GEORGE HYDE, OF LONDON, ENGLAND, ASSIGNOR TO GILBERT HINDS WHITEHEAD, OF NEW ELTHAM, ENGLAND.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 751,917, dated February 9, 1904.

Application filed October 9, 1903. Serial No. 176,425. (No model.)

To all whom it may concern:

Be it known that I, THOMAS GEORGE HYDE, engineer, a subject of the King of Great Britain and Ireland, residing at 57[c] Hatton Garden, in the city of London, England, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

This invention has for its object to provide printing-machines of the character described in the specification of United States Patent No. 666,484, with improved means for preventing a superfluous quantity of ink being supplied to the printing-surface. The inking-rollers, by which the printing-surface is inked, are carried as hitherto in such machines—namely, in a movable carrier, which can be operated so as to move the inking-rollers out of contact with the printing-surface when required and to bring the said inking-rollers again into contact with the printing-surface, the movements being effected by a rocking lever or crutch the respective ends of which operate on projections carried by a shaft so as to partially rotate the shaft in one direction or the other, according to the direction in which the said lever or crutch is rocked. When the shaft is partially rotated in one direction, the sliding bars are operated, so that the inclines thereon move the carrier of the inking-rollers so that they are carried out of contact with the printing-surface, and when the shaft is partially rotated in the other direction the inking-rollers come again into contact with the printing-surface. These parts are or may be the same as those usually employed in machines of the character referred to. According to this invention the said rocking lever or crutch is provided with a device by which it can be operated by the attendant while he stands in the position in which he feeds the machine with sheets to be printed. This device consists of a rod, to one end of which the rocking lever or crutch is connected, the opposite end of the said rod being connected to the toggle-levers of the mechanism for moving the impression-cylinder from the printing-cylinder and usually operated by a treadle projecting through or near to the platform on which the attendant stands when feeding sheets into the printing-machine, so that should he fail to feed a sheet at the required time when he presses on the treadle the lever or crutch aforesaid will be moved so that the inking-rollers are brought out of contact with the printing-surface and a superfluous quantity of ink is prevented from being supplied to the printing-surface. When the attendant releases the treadle, the lever or crutch will act to cause the inking-rollers to again come into contact with the printing-surface. Means can be provided by which the vibrating roller, by which ink from the ink ductor-roller is applied to the distributing-drum or inking-rollers, is (when the inking-rollers are moved away from the printing-surface) moved into such a position as not to convey ink from the ink ductor-roller to the distributing-drum or inking-rollers. This is conveniently effected by curved bars, on which the axle of the vibrating roller bears, the said bars being acted upon by levers centered to brackets on the frame of the machine and operated by lugs on the carrier of the inking-rollers, so that as the inking-rollers are moved out of contact with the printing-surface the levers will move the vibrating roller out of operative position, and so prevent unnecessary transfer of ink to the distributing-drum or inking-rollers.

The accompanying drawings illustrate, in side elevation, in Figure 1 so much of a printing-machine as is necessary to illustrate this invention, the parts being shown in the position they occupy when the inking mechanism is out of action. Fig. 2 is a detached detail illustrating more clearly the device for lifting the oscillatory roller of the inking mechanism.

The sheets to be printed are fed from a table 1 by an attendant (standing on a platform 2) onto the impression-cylinder 3, which is provided with the usual fingers or grippers by which the sheets are carried between the said impression-cylinder and the printing-cylinder 4. The shaft or axle of the impression-cylinder is mounted in eccentric bushings 5, capable of being turned in the side frames of the machine so as to move the impression-cylinder into and out of contact with the print-

ing-cylinder. Each of the eccentric bushings 5 is provided with a rigid arm 6, which is connected at its outer end to the upper member 7 of a pair of toggle links or levers, the said member 7 being connected at 8 to the lower member 9, which is keyed to a rock-shaft 10, mounted in the side frames of the machine. At the gear side of the machine shown in the drawings the rock-shaft 10 is provided with an arm 11, carrying a stud and friction-roller 12, arranged in a crank-shaped slot 13 14, formed in the lower end of a reciprocating link 15, connected at 16 to the outer end of an arm 17, journaled at 18, and carrying an antifriction-roller 19, which works in a grooved cam 20, secured to the impression-cylinder 3. The crank-shaped slot 13 14 in the link 15 forms a downwardly-engaging shoulder at 21 and an upwardly-engaging shoulder at 22, which shoulders are arranged to engage the antifriction-roller 12 on the arm 11 for the purpose of bringing into and out of alinement the toggle links or levers 7 and 9 for moving the impression-cylinder 3 into and out of contact with the printing-cylinder 4.

Keyed to a rock-shaft 23 is an arm 24, carrying an antifriction-roller 25. Connected to the arm 24 is a rod 26, extending through a guide 27, capable of swiveling in the frame of the machine, and surrounding this rod 26 is a spring 28, one end of which bears on the guide 27, the other end bearing on a collar 29, fast on the said rod 26, so that the said spring causes the roller 25 to bear on the link 15 and force it toward the friction-roller 12. On the rock-shaft 23 is keyed another arm 30, to the free end of which is connected a lever 31, journaled to a bracket 32 and having connected thereto at 33 an operating-arm or treadle 34, which passes through an opening 35 in the platform 2. Supposing that the impression-cylinder is working in contact with the printing-cylinder and that it is desired to move the impression-cylinder out of such contact, the operating-arm or treadle 34 is depressed, whereby through the lever 31 and arm 30 the shaft 23 is rocked, so as to remove the antifriction-roller 25 from its bearing on the slotted link 15, which link will then under the expanding action of a spring 36 be forced into the position for the roller 12 to enter the portion 14 of the slot in the link 15, and the shoulder 22 as the impression-cylinder rotates will, by pressing upward the friction-roller 12, move the toggle-levers out of a straight line and partially rotate the eccentric bush 5, so as to move the impression-cylinder away from the printing-cylinder, and then as the impression-cylinder 3 continues to rotate the grooved cam 20 will cause the slotted portion 14 of the link 15 to move up and down on the roller 12 without operating the toggle-levers. The parts are retained in the position shown in the drawings by a projection 37 on the operating-arm or treadle 34 engaging under the platform 2, as shown. On releasing the treadle 34 the spring 28 by its expanding action on the arm 24 on the rock-shaft 20 will cause the roller 25 to force the link 15 into such position that the roller 12 will enter the portion 13 of the slot in the link 15, and as the impression-cylinder rotates the shoulder 21 in the said slot will press on the roller 12 and thereby rock the shaft 10, so as to bring the toggle links or levers into alinement and through the arm 6 on the eccentric bush 5 turn the said bush in its bearing so as to bring the impression-cylinder 3 into contact with the printing-cylinder 4. Simultaneously with the movement of the impression-cylinder toward and from the printing-cylinder the inking mechanism is moved into and out of operative position as follows: Mounted in bearings in the frame of the machine is a rock-shaft 38, on one end of which is loosely mounted a two-armed lever 39, one arm of which is provided with a toothed segment 40, gearing with a similar toothed segment 41 on one arm of a bell-crank lever journaled at 42, in a bracket 43, fixed to the frame of the machine. The other arm, 44, of the said bell-crank lever carries a friction-roller 45, working in the cam-groove 20 on the impression-cylinder 3, so that as the impression-cylinder rotates the said bell-crank lever will receive oscillating movements and impart through the toothed segments 40 and 41 oscillation to the two-armed lever 39, loosely mounted on the rock-shaft 38. The upper arm of this two-armed lever carries a pivoted crutch 46 to engage with one or other of two projections 47 and 48 on the rock-shaft 38, according to the direction in which the crutch 46 is turned on its pivots. The crutch 46 is connected by a link 49 to the upper end of a rod 50, the lower end of which rod is centered to the connecting-pin 8, by which the two toggle links or levers 7 and 9 are connected, so that when the toggle links or levers are operated, as hereinbefore described, for shifting the impression-cylinder the crutch 46 will be simultaneously rocked on its pivots, so as to bring one or other of its ends into engagement with one or other of the projections 47 48 on the rock-shaft 38. Then by the rotation of the impression-cylinder the two-armed lever carrying the crutch 46 will be oscillated and the shaft 38 will be rocked by the crutch 46 in one direction or the other, according to which of the projections 47 48 it engages. The crutch 46 is provided with a spring by which the said crutch is retained in the position into which it has been rocked on its pivots. On the rock-shaft 38 is an arm connected by a link to a bar 51, arranged to slide longitudinally on rollers 52, journaled in the frame of the machine. Rollers 53 bear on this bar 51, the said rollers 53 being journaled to the vertical slidable frame 54, carrying the inking-rollers 55, by which the printing-frame is inked. The upper surface of the bar 51 has inclined portions at 56,

on which inclined portions the rollers 53 bear when the impression-cylinder is in contact with the printing-cylinder and the frame 54 is in its lowest position, and the inking-rollers are in position to supply ink to the printing-form; but when the impression-cylinder is moved out of contact with the printing-cylinder by the attendant depressing the operating-arm or treadle 34 the bar 51 will at the same time and through the mechanism hereinbefore described be moved longitudinally beneath the rollers 53, which will ride up the inclines 56 onto the upper horizontal surface of the bar, as shown in the drawings, and thereby raise the frame 54, and with it the inking-rollers 55, so that the printing-form will not come into contact with the said inking-rollers.

To prevent ink being conducted from the ink-duct to the inking-rollers when they are raised out of operating position, the vibratory roller 57, by which ink is conveyed from the duct-roller 58 to the ink-distributing roller 59, is by the rising of the frame 54 moved into such position that the vibratory roller will not come into contact with the duct-roller 58. For this purpose there is arranged beneath each end of the axle of the vibratory roller 57 a vertically-slidable bar 60, having a curved upper end 61, on which the axle of the vibratory roller 57 can travel when vibrating. Journaled in brackets 62 on the side frame of the machine is a lever 63, which is supported in a looped bracket or projection 64, fixed on the frame 54. The outer end of the lever 63 is provided with an adjusting-screw 65, on the end of which is loosely fitted a removable collar or distance-piece 66, on which the lower end of the vertical slidable bar 60 bears. When the frame 54 is raised to move the inking-rollers out of action, the lever 63 will be simultaneously raised by the bracket or projection 64 and raise the bar 60, thereby lifting the vibratory roller 57 in its bearings sufficiently high to prevent it from coming when vibrating into contact with the duct-roller. When the frame 54 is lowered to bring the inking-rollers into position for inking the printing-form, the vibratory roller will descend into the operative position. By removing the collar or distance-piece 66 from the end of the adjusting-screw 65 the frame 54, carrying the inking-rollers, can be raised and lowered without affecting the vibratory roller 57.

I claim as my invention—

1. A printing-machine, comprising an ink-duct, a form-roller, form-inking rollers, and means for throwing said inking-rollers clear of the form-roller, in combination with a roller between said inking-rollers and the ink-duct, and means for operating said roller to cause an interruption of ink-supply to the inking-rollers at the same time that they are clear of the form-roller, substantially as described.

2. A printing-machine, comprising an ink-duct, a form-roller, inking-rollers and slides adapted to lift said inking-rollers clear of the form-roller in combination with a vibrator-roller between the ink-duct and inking-rollers, said vibrator having bearings adapted to allow it to be shifted and connection between said slides and said roller adapted to lift said roller to interrupt the ink-supply to the inking-rollers upon their being lifted clear of the form-roller, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS GEORGE HYDE.

Witnesses:
GILBERT FLETCHER TYSON,
WILLIAM GERALD REYNOLDS.