Nov. 7, 1939. J. J. MIKES 2,178,879

PLATFORM OPERATING MEANS

Filed July 31, 1936

Fig. 1.

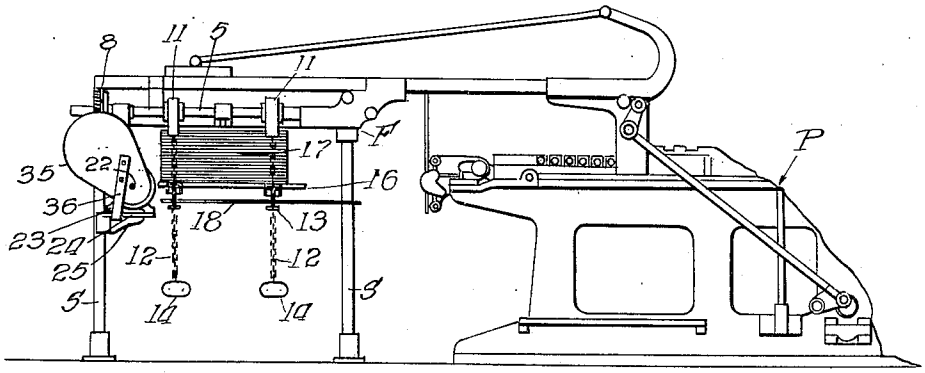


Fig. 2.

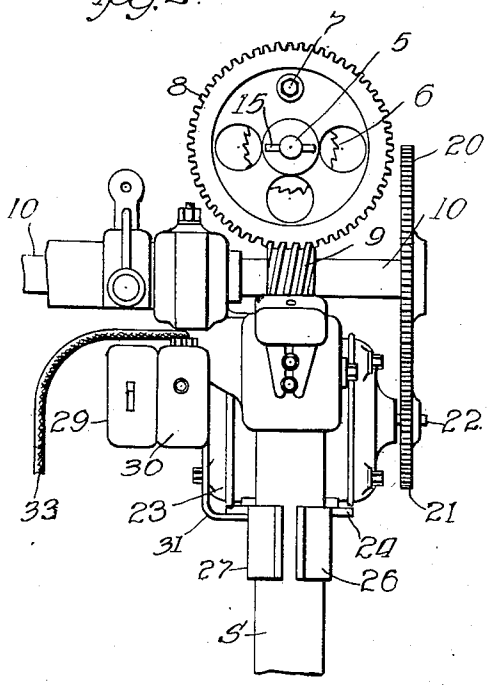


Fig. 3.

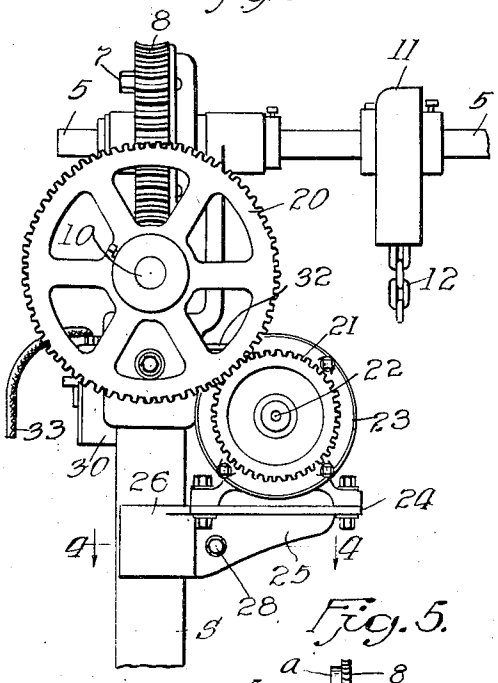


Fig. 4.

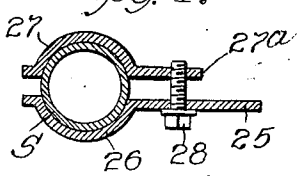
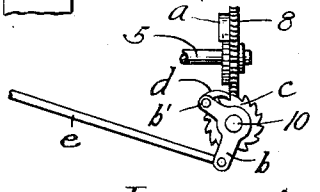


Fig. 5.



Witness:

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UNITED STATES PATENT OFFICE

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PLATFORM OPERATING MEANS

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Application July 31, 1936, Serial No. 93,575

1 Claim. (Cl. 271—88)

This invention relates to platform operating means, and has to do with means for operating the receiving platform of a printing press.

It is known to provide in conjunction with printing presses, particularly color presses, at the delivery end of the press a receiving frame and platform structure to which the printed sheets are delivered. This structure comprises a frame rectangular in plan and rotatably supporting, at each end, transverse countershafts from which the platform is suspended so as to be raised and lowered in accordance with the direction of rotation of the shafts. The countershafts have worm driving connections to a drive shaft rotatably supported lengthwise of the frame at one side thereof, this countershaft being used principally for lowering the loaded platform. A hand wheel, provided with a suitable handle, is secured upon one end of the drive shaft for manually rotating the latter. The platform, when loaded, frequently supports a stack of five thousand sheets or more, providing a load of considerable weight. Since the drive between the countershafts and the drive shaft is through worm gears, lowering of the platform, when loaded, to the floor for removal by a hand truck requires considerable time and is quite laborious, soon tiring the operator.

My invention is directed to avoiding the above noted objections to the present practice and providing simple and efficient means whereby the loaded platform may be lowered at relatively high speed and with expedition and facility. A further object is to provide a power attachment which may be readily applied to receiving frame and platform structures such as are commonly used without necessitating any changes in such structures and without in any way interfering with removal therefrom of a loaded platform. Further objects and advantages of my invention will appear from the detail description.

In the drawing:

Figure 1 is a side view of a printing press of known type, shown fragmentarily and semi-diagrammatically, with an associated receiving frame and platform structure having applied thereto the power attachment means of my invention;

Figure 2 is a fragmentary outer side view of a corner portion of the receiving frame and platform structure, on an enlarged scale, with the power attachment of my invention applied;

Figure 3 is a fragmentary end view of one corner portion of the receiving frame and platform structure with the power attachment of my invention applied thereto, on an enlarged scale;

Figure 4 is a section taken substantially on line 4—4 of Figure 3; and

Figure 5 is a fragmentary detail view of the means for automatically lowering the platform at low speed, in the operation of the press.

I have illustrated my invention, by way of example, as applied to a receiving frame and platform structure disposed at the delivery end of a printing press P. The press, shown fragmentarily and semi-diagrammatically, is made by the Miehle Printing Press & Manufacturing Company, of Chicago, Illinois, and is included in what is known as the Miehle 46 Automatic Unit. It is of known construction and operation and need not be illustrated nor described in greater detail.

The receiving frame and platform structure, at the delivery end of the press, comprises a frame F of rectangular shape in plan, provided at each corner with a tubular upright or standard S. A countershaft 5 is rotatably supported at each end of frame F, adjacent the top and transversely thereof. A ratchet wheel 6 is secured upon shaft 5, adjacent the outer side of frame F and is engaged by a pawl A mounted on a pin 7 secured through the web of a worm wheel 8 loose on shaft 5 at the outer side of ratchet wheel 6. Worm wheel 8 meshes with a worm 9 secured on a drive shaft 10 rotatably mounted at the outer side of frame F adjacent the top thereof and extending lengthwise of the frame. It will be understood that each shaft 5, there being one at each end of frame F, is provided with a ratchet wheel 6 and associated pawl and a worm wheel 8 which meshes with worm 9 of drive shaft 10. The worms 9 lock worm wheels 8 against rotation when drive shaft 10 is not rotated, and the ratchet wheel 6 and the associated pawls are so related as to hold the shafts 5 against rotation in platform lowering direction while permitting rotation of these shafts for raising the platform, as will be described presently.

Two sprocket wheels (not shown) are suitably mounted upon each of the countershafts 5 in a known manner and are enclosed in suitable housings 11. Chains 12 are trained over these sprocket wheels and are suitably secured, at their inner ends, to the ends of two supporting bars 13 of I-beam section. The chains are preferably provided, at their outer ends, with grips or handles 14 of suitable shape. The chains and sprockets provide means for suspending the bars 13 from

the countershafts 5 for raising and lowering thereby in accordance with the direction of rotation thereof. A suitably shaped pin 15 is secured through each shaft 5, adjacent the outer face of worm wheel 8, and is adapted for engagement by a crank handle whereby shafts 5 may be rotated in appropriate direction for raising the bars 13. Ordinarily, however, particularly when the load supported by bars 13 is not appreciable, these bars are raised by pulling downward the outer runs of the chains 12.

A receiving platform 16, commonly formed of wood, rests upon the upper faces of bars 13 for support thereby. This platform receives the printed sheets of paper delivered from the press P, and in Figure 1 a stack of such sheets, designated 17, is shown upon the platform 16.

The bars 13, and the platform 16 and stack 17 supported thereby, are automatically lowered at an appropriate rate, during the operation of the press, by what is commonly termed micrometer means. This micrometer means is known in the art, is of such character that the drive shaft 10 may be rotated manually for lowering the platform 16, after the desired number of sheets have been printed and delivered to the platform, and will be briefly desecribed presently. It is the common practice to provide a hand wheel secured upon the right hand end of drive shaft 10, as viewed from the outer side of frame F, for rotating the latter in proper direction for lowering the loaded platform 16, as previously described. Lowering of the platform in this manner is laborious and time consuming. After the platform has been lowered to the floor, or into position adjacent the floor suitable for removal of the loaded platform by means of a hand truck, a truck of known type is inserted through the ends of frame F beneath the loaded platform, which is then removed and replaced by an empty platform. It will be noted that the end of the frame is unobstructed for accommodating the truck and the loaded platform. Guide rods 18 pass through the bars 13 and, at one end, hook around the standards S at the inner side of frame F for preventing end sway of bars 13 and platform 16. The truck is, of course, provided with a lifting member adapted for insertion beneath platform 16 above the rods 18.

The means for automatically lowering the platform during operation of the press above referred to, is shown fragmentarily in Figure 5 and is, in general, similar to the means disclosed in Patent No. 1,145,921, issued July 13, 1915, to Frank E. Rich. An angle lever *b* is rockably mounted on shaft 10 at the left hand end thereof, as viewed from the side of frame F remote from press P. Lever *b* is disposed at the outer face of a ratchet wheel *c* secured upon shaft 10. A pawl *d*, pivoted on arm *b'* of lever *b* engages ratchet wheel *c* for intermittently rotating the latter and shaft 10. The other arm of lever *b* is connected by suitable linkage means *e* to the press P, in a known manner, for oscillating lever *b* during operation of the press, thus turning shaft 10 step by step in platform lowering direction.

The frame F and the associated platform supporting and adjusting means so far described are known in the art and are not included in my invention except in so far as certain parts thereof cooperate with the power attachment with which my invention is particularly concerned. It is known to those skilled in the art that in stacking the sheets upon the platform 16 stacking fingers and associated mechanism, which occupy considerable space at the top of frame F, are employed. Further, no obstruction to either upward or downward movement of platform 16 is permissible. It is necessary, in providing a power drive for the drive shaft 10, to comply with these conditions.

In order to drive shaft 10 by power means I remove the usual hand wheel secured upon this shaft, previously referred to, and substitute therefor a spur gear wheel 20 secured upon shaft 10 at the right hand end thereof, viewing this shaft from the outer side of frame F, that is, from the side of this frame remote from the press P. Gear 20 meshes with a pinion 21 secured upon shaft 22 of an electric motor 23 of suitable type. Motor 23 is secured upon a motor platform 24 provided with a depending reinforcing web 25 and, at one end, with a sleeve element 26 cooperating with an opposed element 27 to form a split sleeve clamp. Member 27 is provided with an extension 27*a* through which, and web element 25, extends a bolt 28 which screws through element 27*a*. This provides means effective for clamping the motor platform 24 to upright S with the motor gear wheel or pinion 21 in mesh with gear wheel 20 of drive shaft 10. Supporting the motor in this manner, upon the upright S at the forward right hand corner of frame F, provides a simple and direct drive to the drive shaft 10 and also disposes the motor 23 and associated parts in such manner that no obstruction is offered to raising and lowering of the platform 16, and the adjacent end of frame F remains unobstructed for removal therethrough, by means of a suitable truck, of the loaded platform.

Motor 23 has associated therewith a reversing switch 29 and a control switch 30, both of known type, conveniently supported by a suitable bracket 31 bolted or otherwise suitably secured to motor 23 and platform 24. The switches 29 and 30 are enclosed within suitable housings rigidly secured together in a suitable manner, and are suitably attached, as by means of a short nipple, to an outlet box 32 (Figure 3) which is suitably secured to bracket 31 and motor 23. Electrical energy is supplied to the motor, through the switches 29 and 30, from an electric cord 33, of known type, through appropriate connections. Cord 33 contains the usual conductors and is conveniently provided at its free end with a plug cap of known type (not shown).

The motor 23 may be used for driving the shaft 10 in either direction for raising or lowering the platform 16. The platform, when empty, is relatively light and may be raised by means of the chains 12 and the countershafts 5 more rapidly than would be possible by driving the shaft 10 from motor 23. For this reason, the main use of the motor 23 is for driving the drive shaft 10 in such direction as to drive the countershafts 5 in platform lowering direction. The motor provides means whereby the shaft 10 may be driven at much higher speed than is possible when this shaft is rotated manually, in the manner previously described, thus avoiding the considerable time and labor consumed in lowering the platform manually while rendering it possible to lower the loaded platform of considerable weight at relatively high speed with facility. Aside from the labor saved in thus lowering the loaded platform, compared to lowering it manually, the saving in time is an important consider-

ation in that it avoids any considerable delay in the operation of the press, which is of primary importance from the standpoint of production.

Preferably, the gears 20 and 21 are enclosed by a suitable guard 35 supported by a bracket 36 bolted to motor platform 24, as shown in Figure 1.

What I claim is:

In sheet receiving means intended for use at the delivery end of a printing press, a frame, two countershafts rotatably mounted adjacent the ends and transversely of said frame, a receiving platform, means suspending said platform from said shafts for raising and lowering thereof in accordance with the direction of rotation of said shafts, a drive shaft, a worm drive between said drive shaft and the respective countershafts for rotating the latter in either direction in accordance with the direction of rotation of said drive shaft, a ratchet wheel fixed to said drive shaft for turning it in platform lowering direction, a lever rockable about the axis of said drive shaft and adapted for connection to the printing press for oscillation thereby incident to the operation thereof, a pawl carried by said lever cooperating with said ratchet wheel for turning said drive shaft in platform lowering direction incident to operation of the press, an electric motor, and operating connections between said motor and said drive shaft for optionally driving the latter at high speed in platform lowering direction and thereby lowering the platform at high speed under control of said motor.

JOHN J. MIKES.