E. C. NORTHRUP.

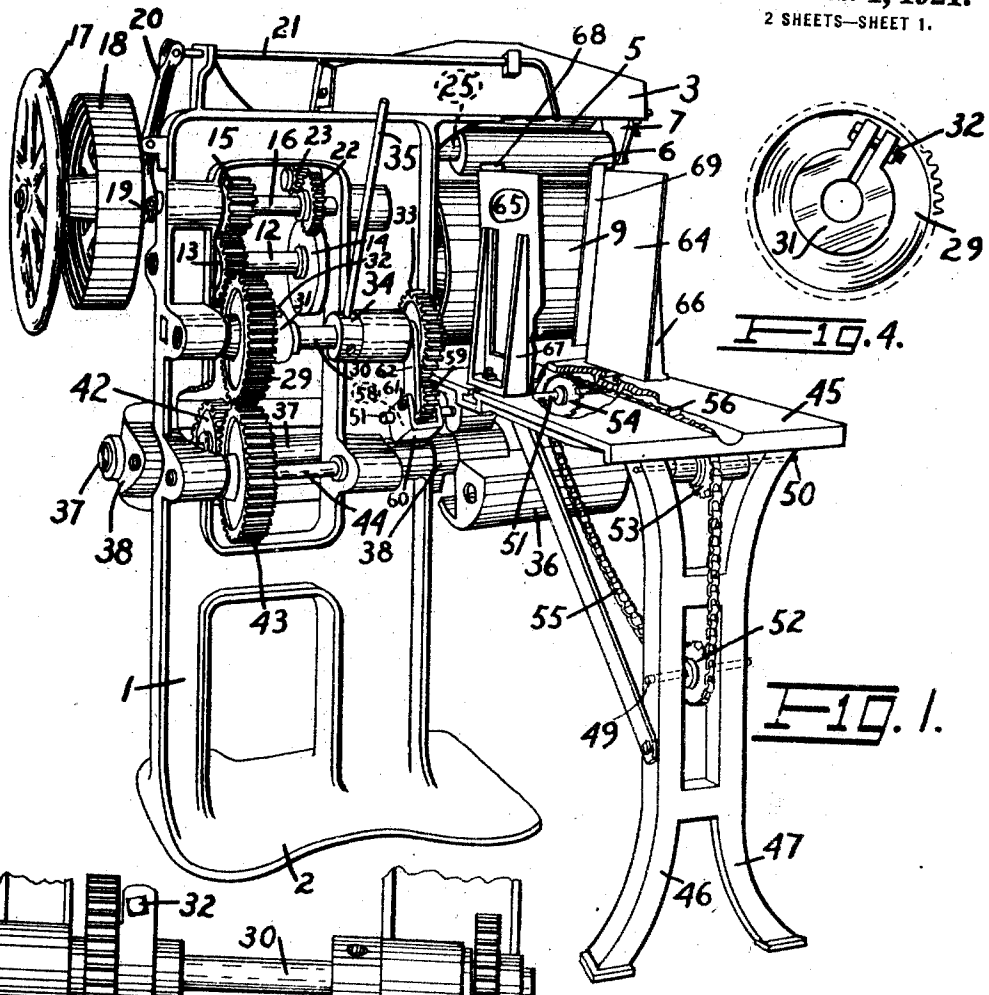
BOX PRINTING MACHINE.

APPLICATION FILED JULY 21, 1919.

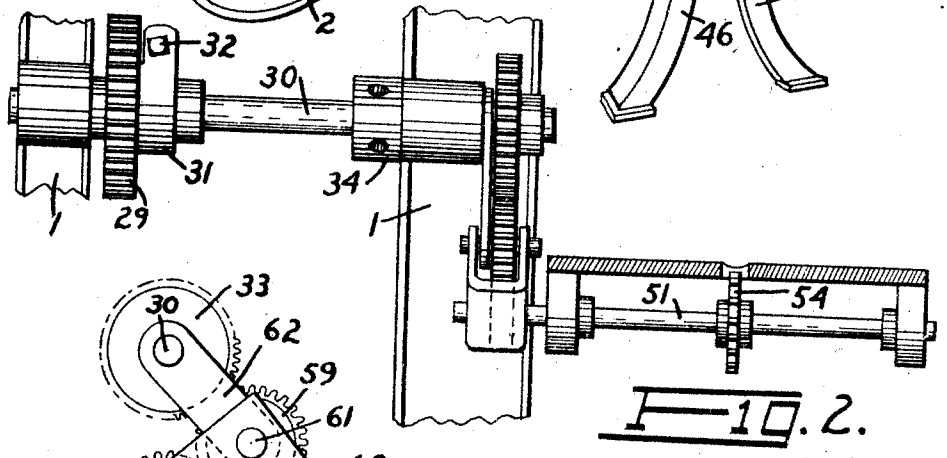
1,366,925.

Patented Feb. 1, 1921.

2 SHEETS—SHEET 1.



F—1—. 1.



F—1—. 2.

F—1—. 3.

F—1—. 4.

INVENTOR

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BY

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2 SHEETS—SHEET 2.

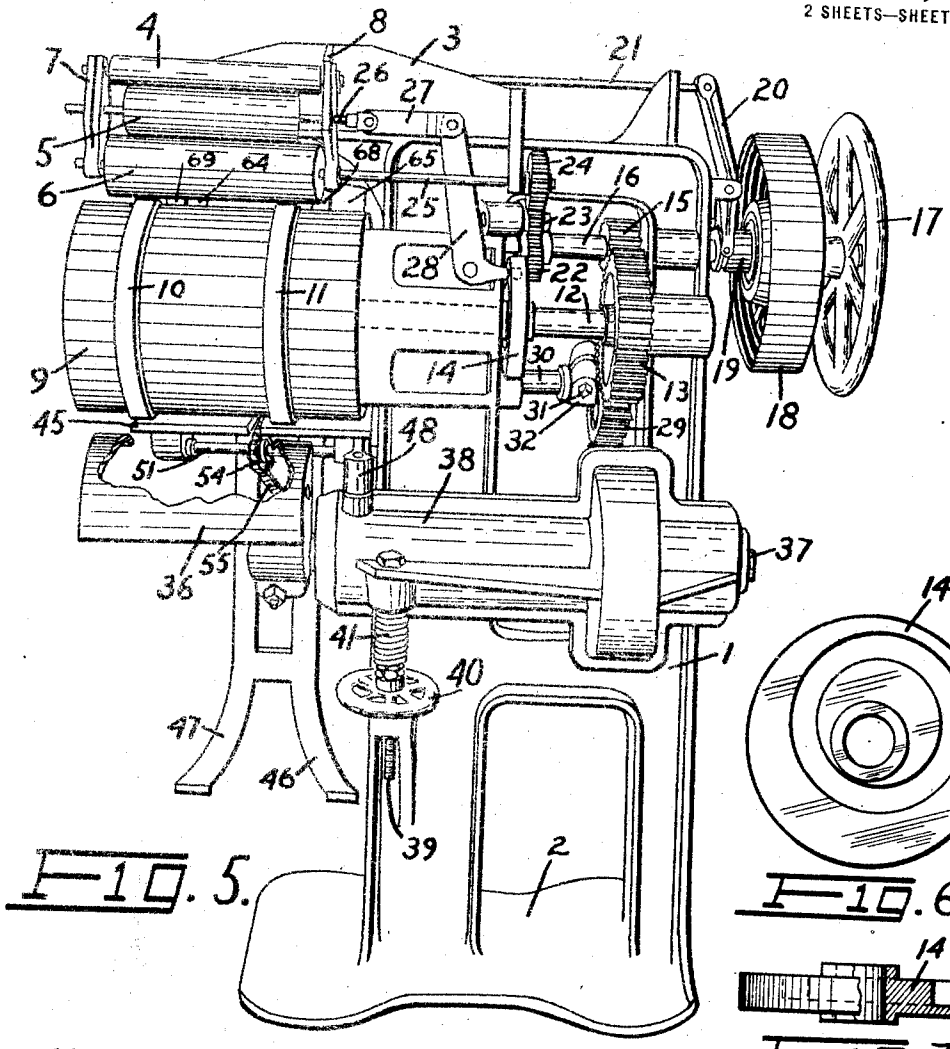


FIG. 5.

FIG. 6.

FIG. 7.

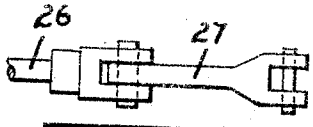


FIG. 8.

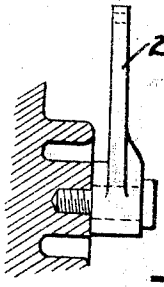


FIG. 9.

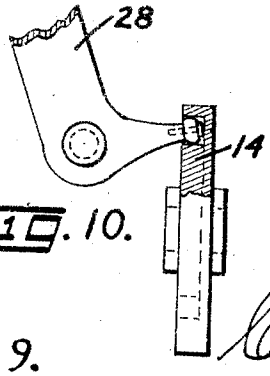


FIG. 10.

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UNITED STATES PATENT OFFICE.

ELMER C. NORTHRUP, OF OAKLAND, CALIFORNIA.

BOX-PRINTING MACHINE.

1,366,925. Specification of Letters Patent. Patented Feb. 1, 1921.

Application filed July 21, 1919. Serial No. 312,335.

To all whom it may concern:

Be it known that I, ELMER C. NORTHRUP, a citizen of the United States, residing at 1001 22d Ave., Oakland, in the county of Alameda, State of California, have invented a new and useful Box-Printing Machine, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a machine for printing box shooks or made up boxes before the covers have been placed thereon and the principal object of the invention is to provide means whereby the chain feed for the loose box shooks may be adjusted to push the shooks through the printing platen at the proper moment to position the printing in the proper place on said shooks as they pass through the machine.

Another object of the invention is to provide means whereby the drive for the feed of the box shooks will be as positive as possible and as near as possible to the shooks and printing platen thereby doing away with a considerable amount of lost motion in the mechanical parts of the machine as is common where there are a number of wheels and chains between the wheels of the printing rollers and the feeding flights of the feed chain.

Another object of the invention is to provide means whereby the inking rollers will adequately distribute the ink over the printing plates thereby improving the printing.

Another object of the invention is the provision of means for adjusting the height of the feeding table so that different thicknesses of box shooks may be fed under the printing rollers without disturbing the operation of the machine.

Other objects of the invention will appear as the description proceeds.

An embodiment of the invention is shown in the drawings in which the same reference numeral is made to the same portion throughout, but I am aware that there may be modifications thereof.

Figure 1 is a perspective view of the machine looking at it from the feed side,

Fig. 2 is a sectional view of a portion of the feed table and showing the shaft and gears which drive the feed chain,

Fig. 3 is an end view of the gears and shafts which enable the feed chain to be operated in different adjustments of the feed table,

Fig. 4 is a side elevation of the gear which drives the shook feed,

Fig. 5 is a perspective view of the printing machine looking in the opposite direction from Fig. 1,

Fig. 6 is a side elevation of the printing ink roller shifting cam,

Fig. 7 is an edge view partly in section of the cam shown in Fig. 6,

Fig. 8 is a plan view of the link which operates the slidable inking roller,

Fig. 9 is an edge view of the inking roller shifting arm, and

Fig. 10 is a side elevation of the lower portion of the inking roller shifting arm.

In the drawings:

The numeral 1 indicates the main form of the machine to which is connected the base 2 and the overhanging arm 3 for the support of the inking rollers 4, 5 and 6. The roller 4 will have the ink applied thereto in any suitable manner and it will be distributed over the lower roller 6 which moves in contact with the printing plates by means of the end movement of the middle roller 5. These rollers are all supported in two brackets 7 and 8 carried by the arm 3.

The printing plates are secured to the roller 9 by means of two rings 10 and 11 and that roller is carried by a shaft 12 which is journaled in the frame 1, and which shaft has a gear 13 and cam 14 rigidly connected thereto. The gear 13 is in mesh with a gear 15 on the shaft 16, which latter shaft has the hand wheel 17 and the belt pulley 18 thereon, said pulley being loose on the shaft and having a clutch 19 operated by the lever 20 and rod 21 to drive the machine. This drive shaft also has a gear 22 thereon which is in mesh with the gear 23, the latter being in mesh with the gear 24 on the shaft 25 which supports the inking roller 6.

The shaft 26 which carries the inking rollers 5 is connected by means of a link 27 with a bell crank lever 28 which is pivotally mounted on the main frame 1 adjacent the cam 14. The gear 13 is in mesh with the gear 29 in back of and slightly below the same on the shaft 30. This latter gear has a split hub 31 which is held in engagement with said shaft frictionally by means of the bolt 32. This shaft also has a gear 33 thereon and it is provided with a collar 34

which has a plurality of holes to receive the adjusting lever 35, said lever being removed from the collar when the machine is in operation.

The lower printing platen 36 is made only as large as is necessary to make the impression from the given plate, and it is carried by the shaft 37 supported in the adjustable yoke 38, said yoke being raised or lowered by means of the screw 39 which is threaded through the hand wheel 40, while a heavy spring 41 permits the platen to give enough to prevent danger of breakage should two shooks, or a thick shook pass between the platen and printing roller. The shaft 37 has a gear 42 thereon which is in mesh with the gear 43 in such relation as to permit a certain adjustment of the yoke without seriously disturbing the driving relations of said gears and the latter gear is carried by the shaft 44.

At the back of the printing machine, there is the feed table 45 which is supported by the two legs 46 and 47 and by the lug 48 which bears on the yoke 38 and raises and lowers the feed table exactly as the lower printing roller is raised or lowered. This feed table has three shafts journaled therein as indicated at 49, 50, and 51 on which shaft the sprocket wheels 52, 53 and 54 are mounted, and around which the feed chain 55 passes. The feed chain is provided with suitable flights 56 for feeding the box shooks to the printing rollers, said flights being properly spaced for that object.

The feed chain drive shaft 51 is connected with the driving mechanism of the machine by means of a gear 58 on the shaft 51, which gear is in mesh with a gear 59 in turn in mesh with the gear 33 on the shaft 30. The two gears 58, 59 are held in mesh by means of a U shaped yoke 60 which connects the shaft 51 and the shaft 61 of the gear 59; and the gear 59 is held in mesh with the gear 33 by means of the link 62 connecting the shaft 61 and the shaft 30.

It will be apparent from the construction just outlined that the shaft 51 may be moved through a considerable distance, all that is necessary for the purpose, without disturbing the driving relation of the three gears 58, 59 and 33.

The table has a receptacle for the box shooks consisting of the two sides 64, 65 which are held in place on the table by means of brackets 66, 67; and the sides have flanges at their front as indicated at 68, 69. These flanges are raised slightly from the table 45 as indicated on the lower part of the flange 69 in order to prevent more than one box shook from being pushed into the printing rollers at a time.

In operation, the handle 21 is moved to engage the driving clutch and the machine is started, but prior to the operation of the machine, if the box shooks are to be fed in automatically, the lever 35 is operated to shift the position of the shaft 30 with respect to the gear 29 so that the flights 56 will engage the box shooks at the proper time with respect to the printing platen and printing roller to properly register the printing upon the shook. When the machine is once started and the proper register obtained, it will automatically print the shooks so long as a supply is maintained between the two plates 64, 65, and at the same time, the oscillation of the arm 28 will cause the ink to be evenly distributed upon the inking roll 6. If the machine is to be used for printing upon partially set up boxes, the table 45 is removed and the attendant places the boxes on the printing platen 36 by hand in such a position as to enable the printing plate which is secured between the rings 10 and 11 to properly register the impression.

It will also be noted that if a box shook gets stuck in the feed hopper from any cause, that the friction clutch 31 will slip and prevent the chain 55 from being broken or the machine from being injured.

What I claim is as follows, but various modifications may be made in the construction shown in the drawings and above particularly described form, within the purview of my invention:

1. A box printing machine comprising a printing roll, a swinging arm, means to adjust said arm, a printing platen carried by said arm, a table supported by said arm for holding a pile of box shooks, a chain having means to feed the box shooks one at a time under the printing roll, sprocket gears over which the feed chain passes, a train of gears connecting the printing roll with the feed chain sprocket wheel and a friction drive for said train of gears whereby the position of the chain flights may be adjusted or whereby the train may be stopped if the pressure thereon is increased above a predetermined limit.

2. A box printing machine comprising a printing roll, a printing platen, a feed table adjustable with the printing platen adapted to receive a pile of box shooks, a chain for feeding the box shooks one at a time from the bottom of the pile to the printing mechanism, sprocket wheels over which the feed chain passes, an adjustable gear train connected with the shaft of the sprocket wheel adjacent the printing mechanism, and a friction clutch for driving said adjustable gear train and the feed chain.

In testimony whereof I have hereunto set my hand this 14th day of July, A. D. 1919.

ELMER C. NORTHRUP.