No. 653,367. Patented July 10, 1900.

N. C. STILES.

ROLLER COPYING PRESS.

(Application filed Dec. 13, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

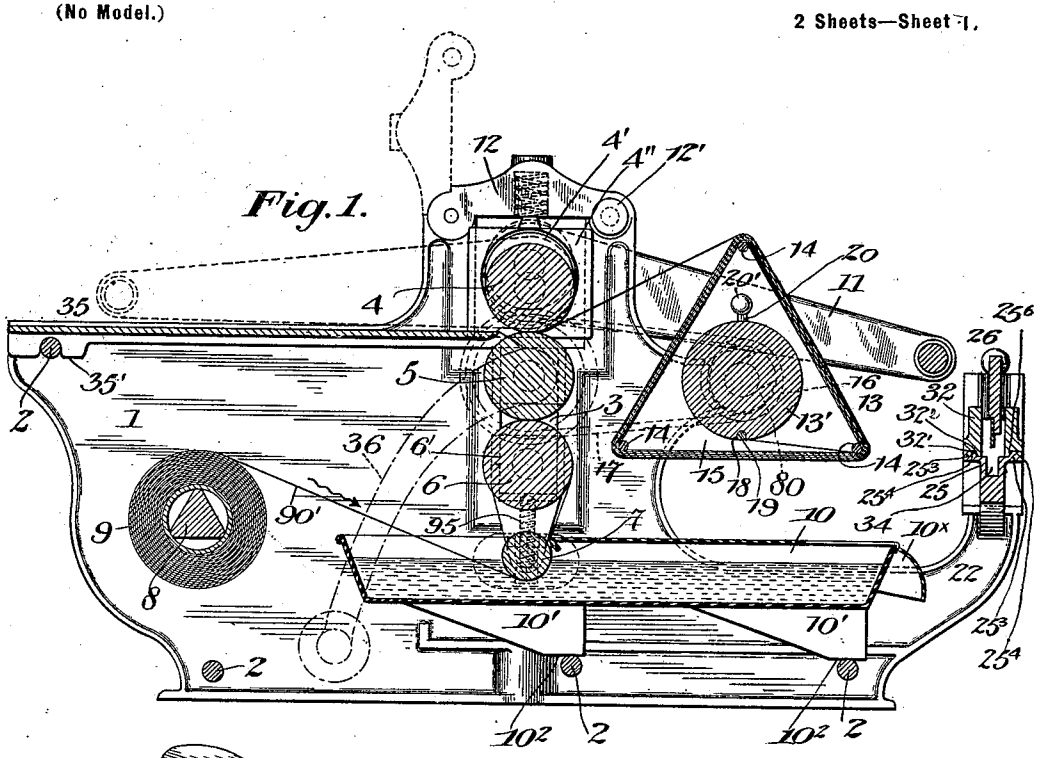

Fig. 2.

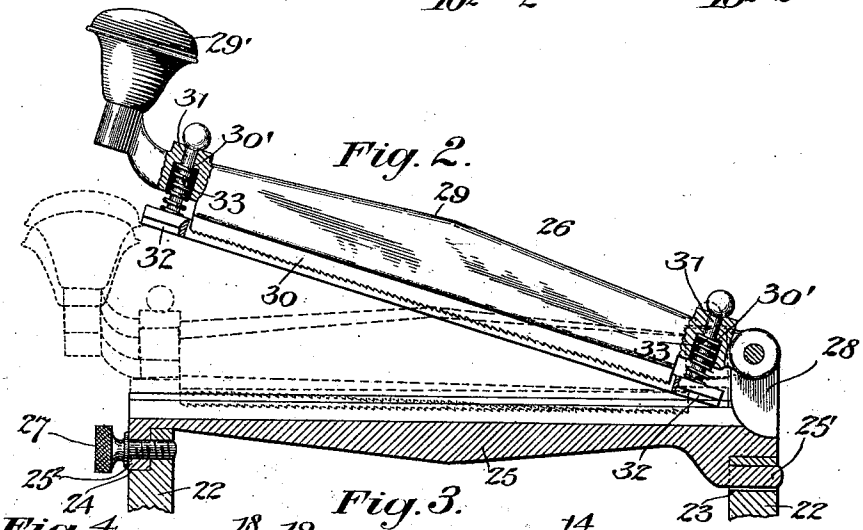

Fig. 3.

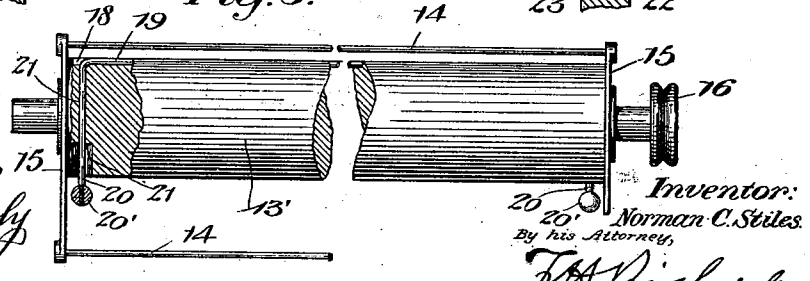

Fig. 4.

Witnesses:
A. B. Mattingly
R. W. Tillman

Inventor:
Norman C. Stiles.
By his Attorney,
F. A. Richards.

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Fig. 5.

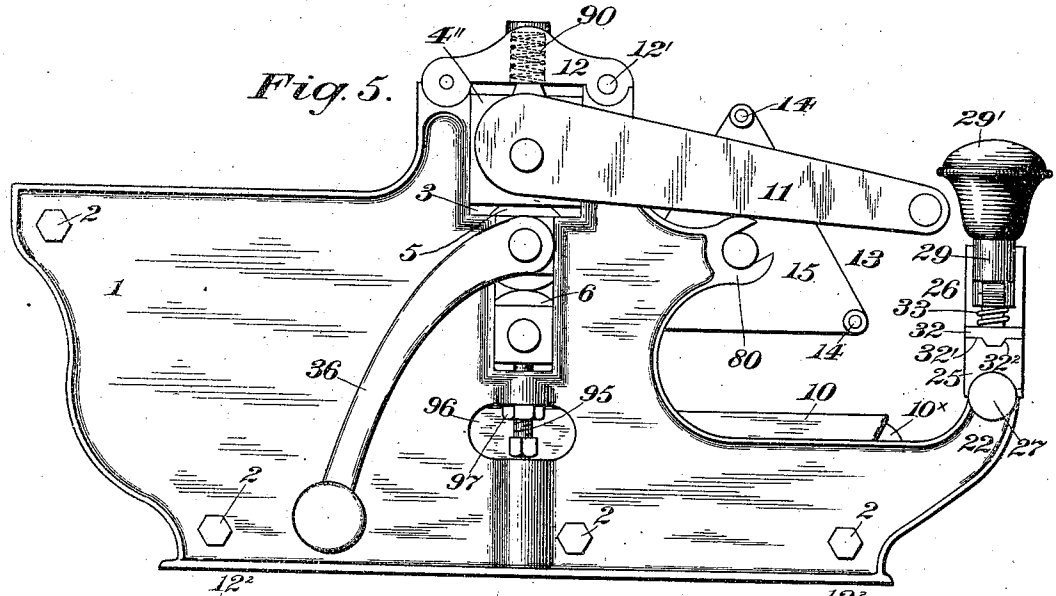
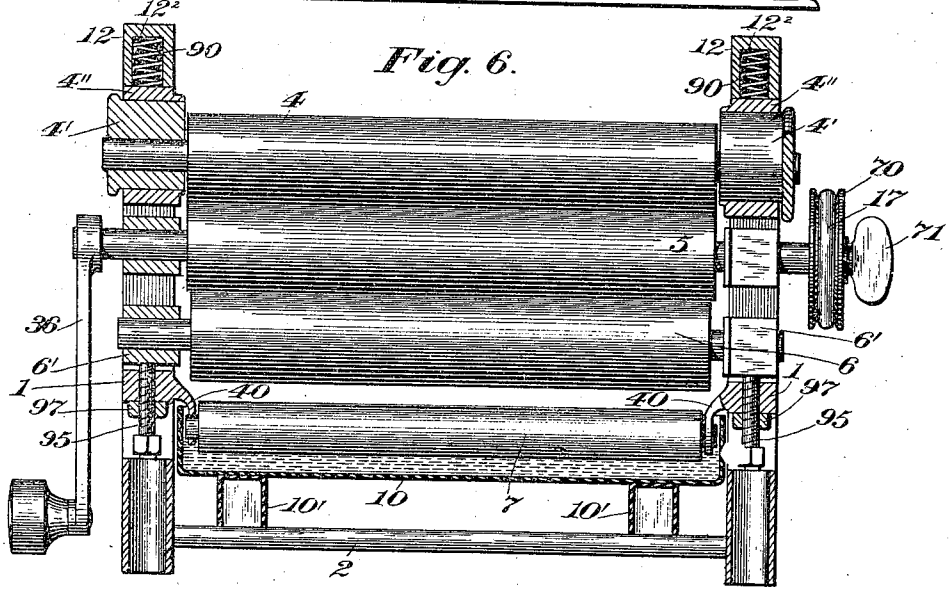


Fig. 6.



Witnesses:
C. B. Mattingly
R. M. Pittman

Inventor:
Norman C. Stiles.
By his Attorney,
F. A. Richards.

UNITED STATES PATENT OFFICE.

NORMAN C. STILES, OF WATERTOWN, NEW YORK.

ROLLER COPYING-PRESS.

SPECIFICATION forming part of Letters Patent No. 653,367, dated July 10, 1900.

Application filed December 13, 1899. Serial No. 740,167. (No model.)

To all whom it may concern:

Be it known that I, NORMAN C. STILES, a citizen of the United States, residing in Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Roller Copying-Presses, of which the following is a specification.

This invention relates to what are known in the art as "roller copying-presses," in which manuscript is copied on a continuous strip or web of paper which is fed from a roll, is automatically dampened, is passed between a series of pressure-rollers, and is finally wound on a reel; and the object of my improvement is to enable the work to be done rapidly and in a more efficient manner by devices embodying a series of vertically-alined rollers, over and between which the paper strip is passed, a removable reel upon which the paper may be wound, and a cutter for severing the sheets containing the impressions from said strip or web.

Other details of my invention relate to the removable pan or water-tank and other parts, as will hereinafter appear.

In the accompanying drawings, in which like numerals are employed to designate like parts throughout the several views, Figure 1 is a longitudinal vertical section of the machine. Fig. 2 is an end view, partly in section, illustrating the peculiar kind of cutter employed for severing sheets from the strip. Fig. 3 is a view, partly in section, of the reel on which the strip may be wound after it leaves the copying-roll. Fig. 4 is a sectional view of the body of the winding-reel. Fig. 5 is a side elevation; and Fig. 6 is a transverse section of the machine on line x x, Fig. 5, showing a modified manner of supporting the dampening-roll.

Referring to the drawings, the numeral 1 represents one of the side frames of the machine, two of said frames being employed and united in some suitable manner, as by tie-bolts, (designated by 2,) each of said side frames being slotted at 3 to receive the journal-boxes of the pressure, copying, and dampening rollers. These rollers are designated as follows: 4 represents the copying-roll, mounted in the boxes 4″ at the top of the machine; 5, the combined pressure and drying roll, coöperating with the roll 4; 6, the drying-roll in engagement with the roll 5, and 7 the dampening-roll, which may be mounted either in bearings of the journal-box 6′, as shown by dotted lines in Fig. 1, or in stationary bearings projecting from the frame, as shown at 40, Fig. 6, this latter being the preferred construction. The copying, pressure, and drying rollers are arranged in the form of a "three-high" mill, and the dampening-roll 7 is of small diameter and is located at some distance from the drying-roll 6, said roll 7 being preferably mounted in stationary bearings, as shown in Fig. 6.

The numeral 8 designates a reel adapted to receive a roll of copying-paper 9, from which the web or sheet is carried under the dampening-roller, threaded between the three-high rollers, and advanced either to the cutter or to the winding-reel, as hereinafter set forth.

The numeral 10 designates the pan or tank for containing the dampening fluid in which the roll 7, over which the paper is passed, is partially immersed. This pan or tank is provided with a series of inclines or wedges 10′, having flattened portions 10^2 resting upon the rolls or ties 2. By virtue of this construction the tank 10 will be elevated as it is shoved into place beneath the rolls and will of course be lowered when withdrawn therefrom, a suitable handle $10^\times$ being provided for the purpose of manipulating the tank.

To the journals of the upper roll 4 are attached eccentric portions 4′, and a swinging bail or handle 11 is shown integral with one of said portions and frictionally held on the end of said roll. (See Fig. 6.)

Caps 12 are provided for securing the boxes 4″ of the upper roll in place, and these caps are fastened in position by ordinary screws or bolts 12′, and each cap is chambered at 12^2 to receive a spiral spring 90, said springs bearing against the boxes 4″ and causing the rolls to be held in contact under yielding pressure.

The numeral 13 designates a reel composed of a barrel 13′ and rods 14, connected thereto by end pieces 15. The axle of this reel is equipped with a pulley or similar device 16 of small diameter, as shown more clearly in Fig. 3, and this pulley is connected by a belt 17 with a pulley 70 of larger size, clamped on the axle of the combined pressure and drying

roller 5, as by a screw 71. (Shown in Fig. 6.) Open bearings 80 are provided on the frame for the reception of the axle of said reel, and it may be readily slipped into place or withdrawn from said bearings. The barrel 13′ of the reel 13 is grooved at its top, as at 18, to receive the longitudinal portion of a paper-clamp 19, the ends 20 of which are provided with suitable knobs or handles 20′ and are movable back and forth in perforations 21 in said body 13.

Projecting from the forward end of the frame of the machine are extensions 22, one of which is provided with a perforation 23 and the other with a rabbeted portion 24 for a purpose hereinafter set forth. Mounted on these extensions 22 is the frame 25 of the paper-severing or paper-cutting device, (designated in a general way by 26 and illustrated more particularly in Fig. 2,) said frame 25 being provided at one end with a pin or lug 25′, adapted to fit the perforations 23 in one of the extensions 22 and at its other end with a downwardly-extending lip 25^2, fitting the rabbeted portion 24 of the other extension 22, a bolt or other fastening device 27 being employed to secure said frame in position.

Rising from the frame 25 is a standard 28, to which is pivoted a lever 29, carrying on its under side a serrated knife or cutter 30, said lever being equipped with a handle 29′ and perforated, as at 30′, to receive the stems or shanks 31 of a yielding presser-foot 32, which is normally thrust below the knife or to the position shown in Fig. 2 by suitable springs 33, surrounding the stems 31. This presser-foot has peculiar clamping-faces consisting of straight portions 32′ and inclined or beveled portions 32^2, as shown in section at the right in Fig. 1, and the base or frame 25 of the cutter is provided with side extensions 25^3, having similar clamping-faces 25^4 and 25^5 to receive the impact of said clamping-faces on the presser-foot. The frame 25 is also provided with a slot or kerf 34 for the reception of the cutter 30.

A removable table 35, upon which the manuscript to be copied is placed, is mounted on the top of the machine and is provided with a grooved portion 35′ for fitting over one of the cross ties or bolts 2, by which means said table is held in position. The paper strip or web 90′ is fed from reel 9 in the direction of the arrow under the dampening-roll 7 over the drying or wringing roller 6 and between said roller 6 and the pressure-roller 5 and over and between the roller 5 and the copying-roller 4, and from thence to the reel 13, upon which it is wound, or to the cutter, if said reel be omitted. The pressure of the rollers upon the strip may be nicely regulated by manipulating the set-screws 95, bearing against the journal-boxes of roll 6, (see Figs. 1, 5, and 6,) the heads of which screws are accessible through openings 96 in the frame, said screws being locked against movement by jam-nuts 97 after they have been adjusted. The letters or other manuscript to be copied are placed upon the table 35 and are passed therefrom with the written side down between the paper strip and the copying-roller, and said roller having been thrown down by handle 11 and eccentrics 4′ in the manner before described such matter will be fed between the pressure-roller and the copying-roller in an obvious manner. The rollers 4, 5, and 6, which are preferably made of rubber, are turned by a suitable crank or other device 36, applied to the axle of the pressure-roller 5, as shown in Fig. 5, and after the web or strip has been threaded between said rolls the free end thereof may be secured to the winding-reel 13′ by means of the clamp 19. As shown in Fig. 1, the relative sizes of the pulleys on the reel 13 and roller 5 are such that the reel 13 is driven by the belt 17 slightly faster than the roller travels, whereby the paper is kept taut and all danger of crimping or tearing the same is obviated, the belt 17 slipping when the tension on the strip becomes too great.

If at any time it is desired to sever the copied matter directly from the strip or web, the reel is removed from the open bearings 80 and the free end of the sheet passed over the base of the cutting-frame 25. The lever 26 is then depressed, and as it falls the presser-foot 32 comes in contact with the paper and the peculiar surfaces thereof clamp the same to the base at two points on each side of the slot 34 and simultaneously slightly stretch the paper. Upon a further downward movement of the lever 36 the serrated or other form of knife 30 is forced through the presser-foot and into the slot 34 of the base-piece to sever the sheet from the web of paper, and the paper being held taut in this manner the knife operates to sever the same with a clean cut.

By arranging the rolls and connecting one of them with the reel in the manner described the paper from the roll 9 on reel 8 will be smoothly and evenly fed between the rollers and will, as above stated, be held sufficiently taut to prevent buckling.

As is obvious, the sheets of paper containing the copied matter may be severed from the strip wound on the reel by severing the web at a point between the winding-reel 13 and the rollers and carrying the free end thereof over the base 25 of the cutter. When this is done, the belt 17 may be removed from pulley 16 or the clamp-screw 71 of pulley loosened, and the reel will then freely rotate in its bearings as the web is pulled therefrom. After the matter to be copied has passed between the copying and pressure rollers 4 and 5 it may readily be removed by hand from that portion of the strip or web between said rollers and the reel 13, and this pressure may be relieved at any time by throwing the handle 11 over to the left, and

thus turning the eccentrics 4', whereby all danger of flattening the peripheries of the rolls is avoided.

While I have shown a belt as a convenient means for driving the reel 13 from one of the rollers, yet the invention is not limited thereto, as other forms of gearing may be substituted for said belt.

By the means shown and described the rollers can be so adjusted that they will bear upon each other with even and regular pressure.

By mounting the dampening-roller in stationary boxes, as shown in Fig. 6, said roller is always maintained in the same position and is immersed to a certain depth in the fluid in the pan or tank.

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

1. A roller copying-press comprising a series of vertically-alined three-high rollers and a dampening-roller carried by the frame; a reel upon which the paper to receive the impression is wound; a winding-reel for receiving the impressed material; a removable dampening tank or vat beneath the rollers; and means whereby when said tank is moved into position it will be raised to immerse the dampening-roller therein.

2. In a machine of the class specified, the combination, with a series of pressure and drying rolls and with a copying-roller, of a reel from which the paper is passed over and between said rollers; a dampening-roll; a frame; and a water tank or vat mounted on said frame and provided with inclined portions on its under side coöperating with fixtures of the frame.

3. In a machine of the class specified, the combination, with a dampening-roller, of a removable water-tank, and means whereby when the water-tank is moved into position it will be elevated to immerse the dampening-roller in the liquid contained in said tank.

4. In a machine of the class specified, the combination, with a series of driven rollers, of a non-driven dampening-roller; a removable water-tank; means whereby when said tank is moved into position it is raised to immerse the dampening-roller therein; and a reel for winding the impressed paper after it leaves the rollers.

5. In a machine of the class specified, the combination, with a frame having open bearings, of a series of three-high rollers having their axes in vertical alinement; a dampening-roller journaled in stationary bearings of the frame; a reel for holding the roll of paper; a take-up reel mounted in the open bearings of the frame; and means for actuating said reel.

6. The combination, with a series of three-high rollers having their axes in vertical alinement, of a dampening-roller located below and out of contact with the lowest of said rollers; a water pan or tank; means for raising said tank as it is moved into position; and a take-up reel mounted in bearings at the top of the frame.

7. In a machine of the class specified, the combination, with a series of three-high rollers, of a lever having eccentrics working in the boxes of the upper roller; caps for closing the channels in which the journal-boxes are placed; and springs carried by said caps and bearing against the upper boxes.

NORMAN C. STILES.

Witnesses:
FRED. J. DOLE,
WM. H. BLODGETT.