

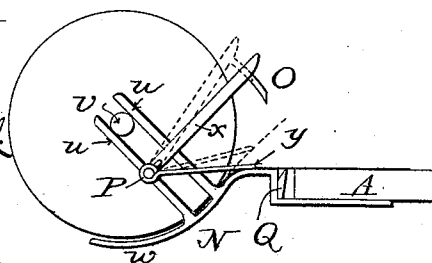
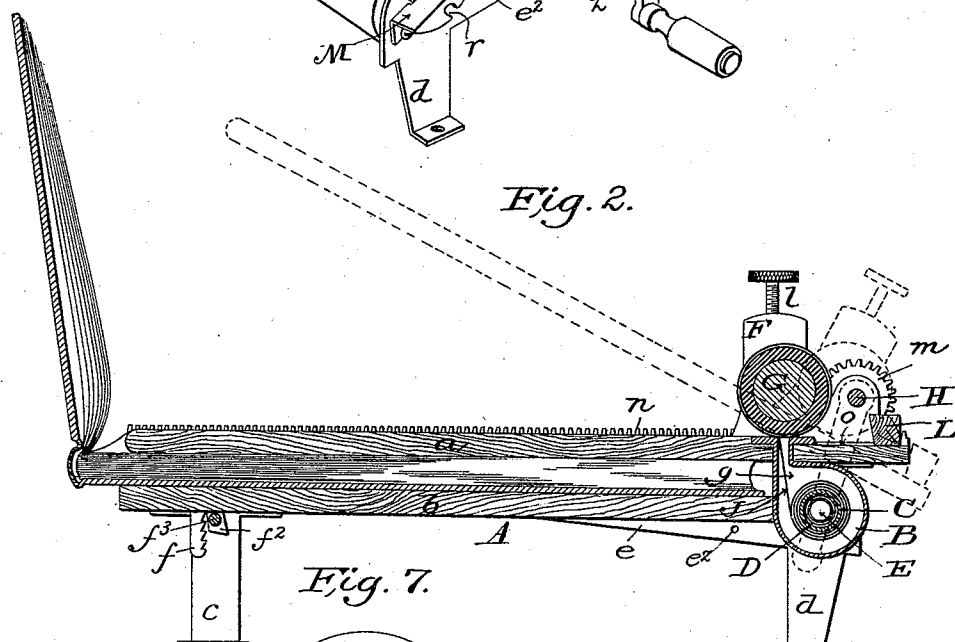
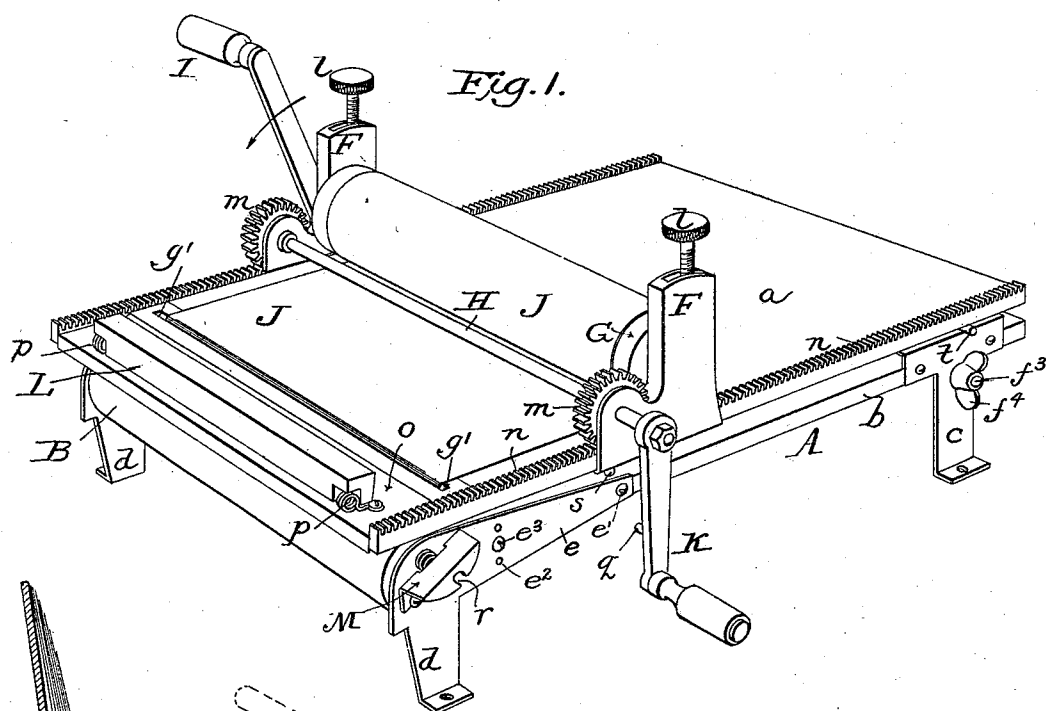
(No Model.)

2 Sheets—Sheet 1.

D. HEALY.
COPYING PRESS.

No. 478,601.

Patented July 12, 1892.



Witness:

James F. Duhamel

Horace A. Dodge.

DORUS HEALY,
Inventor,

by Rodger Lons,
Atty.

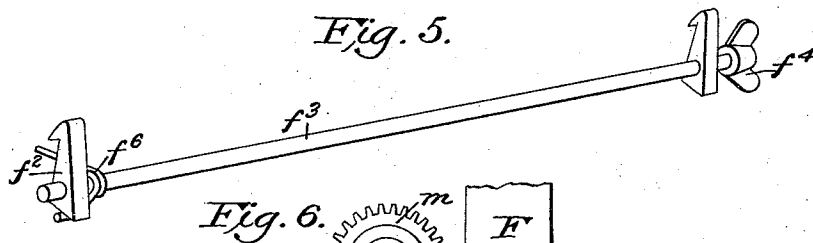
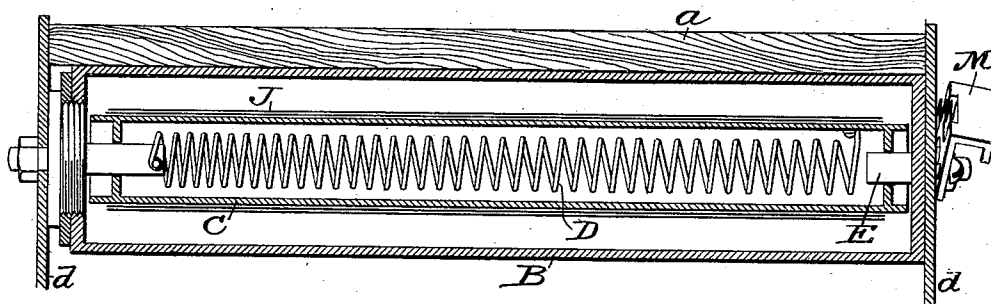
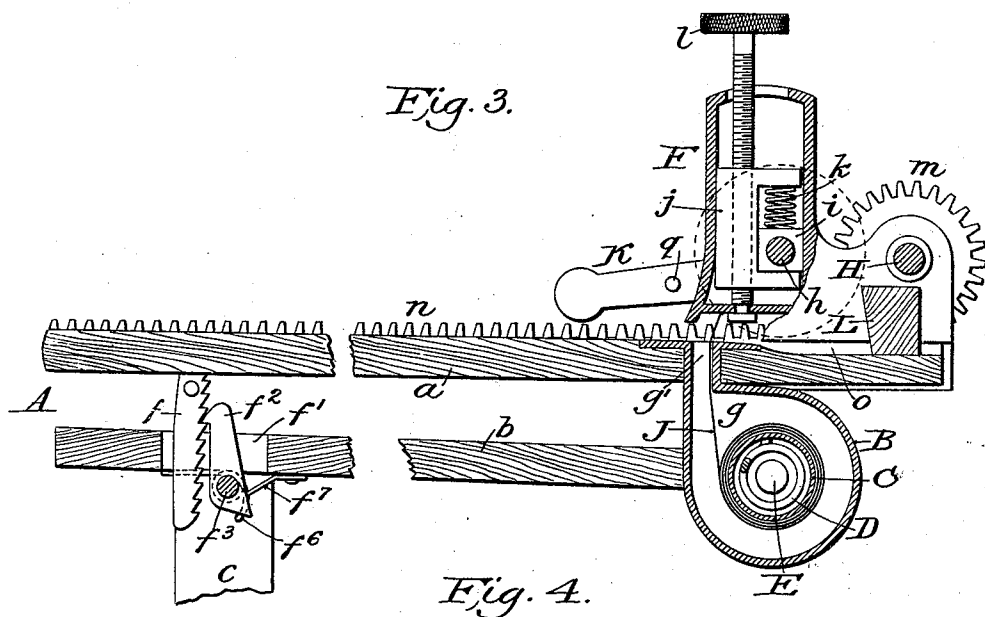
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2 Sheets—Sheet 2.

D. HEALY.
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Witness

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UNITED STATES PATENT OFFICE,

DORUS HEALY, OF DANSVILLE, NEW YORK.

COPYING-PRESS.

SPECIFICATION forming part of Letters Patent No. 478,601, dated July 12, 1892.

Application filed September 11, 1891. Serial No. 405,434. (No model.)

To all whom it may concern:

Be it known that I, DORUS HEALY, a citizen of the United States, residing at Dansville, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Copying-Presses, of which the following is a specification.

My invention relates to presses or devices designed for taking copies of letters and other papers; and it consists in various features, details, and combinations hereinafter set forth and claimed.

In the drawings, Figure 1 is a perspective view of my improved copying-press; Fig. 2, a longitudinal vertical sectional view of the same through the center of the press; Fig. 3, a similar sectional view on a larger scale, the line of section being to one side of the center; Fig. 4, a vertical longitudinal sectional view through the water-trough, and Figs. 5, 6, and 7 views illustrating certain details hereinafter referred to.

In the present machine I employ a bed or table to support or hold the paper being copied and also the copying-paper. This bed or table has at one end a water-trough, in which is mounted a spring-roller, and to this roller there is secured one end of an apron, the other end of which is fastened to another roller, around which said apron is wound. This roller, which I will designate the "pressure-roller," is mounted in a frame or carriage which travels back and forth upon the bed or table, the apron being unwound and firmly pressed by this roller upon the underlying copying-paper and letter as the carriage and the roller travel forward and backward, and thereby effecting the copying. As the carriage recedes the apron is again wound upon the roller, and when the carriage and the pressure-roller reach the limit of their backward movement the spring-roller mounted in the water-trough causes the apron to be unwound from the pressure or carriage roller and winds it upon itself. As the spring-roller is immersed in the water the apron will be wet or moistened as it winds upon the spring-roller. Before taking another copy the apron must be unwound from the spring-roller and wound upon the pressure-roller. These different operations will be clearly understood upon re-

ferring to the drawings, which illustrate the preferred embodiment of my invention.

A indicates a bed or table, the construction of which may obviously be varied considerably, but which in the present instance comprises two leaves *a* and *b*, the upper one of which is hinged or pivoted at or near the rear end of the press, so that the upper leaf *a* may be raised when desired, as shown in Fig. 2 by the dotted lines. The lower leaf or section *b* is provided with legs or feet *c* at the forward end and legs or feet *d* at the rear end, the said legs or feet *d* being provided each with an arm *e*, pivotally connected with or secured to the said lower leaf. As shown in Fig. 1, this arm *e* is extended forward from each of the legs *d* and pivoted at its forward end *e'* to the side of the lower leaf *b* and near the other end is provided with two or more holes *e²* to receive a screw or pin *e³*.

In Fig. 1 the screw *e³* is shown as placed in the middle hole *e²*, and if it is desired to decrease the space between the leaves *a* *b*, the screw *e³* will first be removed. Then the leaf *b* is swung a slight distance upon the pivot *e'*, so as to bring its rear end opposite the uppermost hole *e²*, when the screw *e³* is again inserted. If it be desired to increase the space between the leaves *a* *b*, the rear end of the leaf *b* is lowered, so as to come opposite the lowermost hole *e²*. This adjustment is provided to allow the use of copying-books of different thicknesses, it being understood of course that the body of the copying-book is placed between the leaves *a* and *b*, as shown in Fig. 2.

In order to retain the leaves in their proper relative positions and to firmly clamp and hold the copying-book, I provide a locking device. (Shown in Figs. 1, 2, 3, and 5.) The leaf *a* is provided with one or more notched or toothed bars *f* on its under side, which are designed to pass downward through slots *f'*, formed in the lower leaf, and to be engaged by pawls or dogs *f²*, secured upon a shaft *f³*. This shaft, which is journaled in the lower leaf *b* or its legs *c*, is provided outside of said legs with a thumb-piece *f⁴*, Figs. 1 and 5, by means of which the shaft may be partially turned to throw pawls or dogs out of engagement with the notched bars. A spring or

springs f^6 , Figs. 3 and 5, is employed to throw the pawls or dogs into engagement with the bars, while a stop f^7 is secured to the under side of the leaf (see Fig. 3) to limit the movement of the pawls or dogs. Any other suitable locking device may be substituted for that shown.

B indicates the water-trough, which is secured to the under side of the leaf a at its rear end. This trough is shown as being made approximately circular in cross-section, with an upwardly-extending neck g at its forward side, the said neck extending upward to and through a transverse slot or opening g' , formed in the leaf a , as shown in Figs. 1, 2, and 3. I do not wish to limit myself, however, to the use of a water-trough circular in cross-section, nor to a water-trough in which the neck extends up through the slot or opening g' in the upper leaf, for it is obvious that other forms of troughs may be advantageously employed and placed in different positions, and also that the neck or throat might terminate at and be secured to the under side of the upper leaf. Mounted within this trough B is a roller C, and within the roller is a coiled spring D, having one end secured to the roller and the other end secured to the stud or axle E, upon which the roller freely turns, as shown in Fig. 4.

Instead of employing a through axle or shaft I prefer to employ two short studs or journals E E', projecting from the ends of the water-trough, as shown, and it is upon these studs that the upper leaf is hung or pivoted.

F F indicate housings, which carry the blocks in which the pressure-roller G is journaled, and which, in connection with the cross-shaft H and pinions m , constitute what I may term the "carriage." The housings embrace the edges of the leaf a , and thereby prevent the pressure-roller and apron from rising up off the said upper leaf. The journals h of the roller are carried in blocks i , which in turn are mounted in a larger block j , a spring k being interposed between the two blocks and serving to press the roller G down upon the bed or table with the requisite force. This large block j is adjusted vertically within the housings or standards F, each by means of a screw l , swiveled in the standard and engaging the block, as shown in Fig. 3. By these screws ll the roller G is adjusted to any required pressure. The roller G is provided with suitable means—for instance, a crank I—for turning or rotating it to wind up the apron J.

Upon the shaft H of the carriage are secured one or more pinions m , which engage corresponding rack-bars n , secured to the upper face of the leaf a , as shown in Figs. 1, 2, 3, and 6, the shaft being also provided with a crank K, by which it may be turned. By turning the shaft H in one direction the carriage with the pressure-roller will travel along and over the upper face of leaf a ; but when turned

in the reverse direction the carriage will be reeled, the apron unwinding from and winding upon the pressure-roller during the respective movements of the carriage, owing to the fact that the force or pressure exerted by the roller upon the upper leaf exceeds the force of the spring-roller, which is tending to wind up the apron.

At a point in rear of the slot or opening g' the upper leaf a is hollowed out or formed with a slight depression o , Fig. 3, so that when the pressure-roller reaches it there will be no contact between the said roller and the upper leaf, and as there will then be no pressure exerted by the roller upon the leaf, the spring-roller immediately unwinds the apron from the pressure-roller and winds it upon itself. As the spring-roller winds up the apron it carries it into and through the water in the trough and wets or moistens it preparatory to taking another copy.

A bar or brake-block L, mounted upon the leaf a near its rear end, is held against the roller G, or, more properly, the apron wound thereon, by means of springs p , Fig. 1, with sufficient force to retard slightly or to regulate or govern the unwinding of the apron from the roller G and the winding upon the roller C.

M, Figs. 1, 4, and 6, indicates a catch yieldingly attached to one of the legs d or to the end of the water-tank, and adapted to be engaged by a pin or stud q , projecting from the crank K, the locking device being provided with a notch or recess r to receive the pin.

Upon reference to Fig. 6 it will be observed that the rear wall of the notch r projects downward farther than the forward wall, so that when the crank K is turned to carry the carriage backward the pin q will readily ride over the notch, but when turned the other way it will catch therein unless the device M be thrown out of engagement with the pin. This locking device or catch is designed to hold the carriage against movement while the pressure-roller is winding up the apron, it holding the pressure-roller directly over the mouth g' of the water-tank, Fig. 2. A lug or projection s , Figs. 1 and 6, secured to the carriage, is, in connection with a lug or projection t , secured to leaf a , designed to limit the movement of the carriage in one direction.

The operation of the press is as follows: The shaft f^2 is turned so as to throw the pawls f^2 out of engagement with the bars f , thereby freeing the leaf a and allowing it to be raised, as shown by dotted lines in Fig. 2. The copying-book is then placed between the leaves a and b , so that the book will open in the opposite direction to the leaves a b , the lower back or cover of the book being fastened to the lower table section or leaf b in any suitable manner. The copying-book is now opened down to the page on which the copy is to be made, the upper table-leaf a lowered and locked in position, and the letter to be copied

laid upon the upper face of the said leaf *a* with the page or leaf of the copying-book which is to receive the copy on top of it. The carriage and attendant parts are presumed to occupy the position shown in Fig. 3—that is to say, the pressure-roller *G* is over the depression *o*, the apron *J* is wound upon the spring-roller *C*, and the carriage-actuating crank *K* is unlocked. The operator now takes hold of the crank *K* and moves the carriage forward until the pressure-roller comes directly over the slot *g'*, and when the carriage is brought to this position (shown in Fig. 2) the pin *q* will be found to be in engagement with the notch *r* of the catch *M*, and the carriage thereby locked against further movement. Now with the parts in this position the crank *I* is turned in the direction indicated by arrow, Fig. 1, and the apron wound from the spring-roller onto the pressure-roller, the surplus water being removed from the apron as it passes over the edge of the slot *g'*, and the spring being put under tension by the unwinding of the apron from its drum or roller. When this winding has been completed, the catch *M* is raised and the crank *K* is turned to carry the carriage and its attachments forward. As the carriage advances, the apron will be unwound from the pressure-roller and laid over and upon the underlying sheets of paper; but as the apron thus unwinds, the pressure-roll presses it down upon the paper sheets with sufficient force to insure a good copy. When the crank is reversed and the carriage recedes, the apron will be wound upon the pressure-roller again. When the carriage reaches such a position that the pressure-roll exerts no pressure on the bed or table, the spring-roller comes into action, unwinds the apron from the pressure-roller, and carries it into the water-trough.

If the pressure-roller is of small diameter, the apron will wind around it a number of times, and it will be seen that unless some means are taken to prevent it there will be a greater pressure exerted at the first part of the travel of the carriage than at the latter part. To obviate this, I propose to make the upper leaf *a* higher or to incline gradually upward toward the outer end relatively to the rack-bars, so that the pressure exerted by the roller *G* will be equal and uniform throughout the length of the leaf. So, too, means must be provided for preventing the expelling of too much moisture from the apron at the beginning of the copying process. It is clear that if a plain cotton or linen apron be employed there will be more thicknesses upon the roller at the beginning than at the end of the travel of the carriage, and consequently more moisture would be expelled onto the paper than is necessary or desirable, with the probability of blurring the copy-sheet. To obviate this, I employ an apron *J* of cotton or other suitable fabric, and coat it upon one side with rubber or equivalent material to render

it impermeable, or employ an apron made wholly of impermeable material. Now, no matter how many wrappings or thicknesses there may be upon the roller *G*, the water or moisture will be expelled from the lower one only, as the water from the other layers cannot pass through from one to another. In lieu of this I may employ a roller *G* of large diameter and whose circumference equals the length of travel of the carriage, there being in such case only one layer or wrapping of the apron around the said roller, in which case a web of cloth may be used.

When the pressure-roller is over the slot or opening *g'*, as shown in Fig. 2, the screws *l* may be turned down, so as to cause the roller to bear with sufficient force upon the edges or walls of the slot to prevent the escape of water from the tank or water-holder, thereby enabling the press to be carried around without danger of leakage.

The presses may be mounted upon a suitable stand or support or made portable, and in some cases—for instance, where letter-books are not used—leaf *b* of the table will be omitted and the table composed of one leaf only. In Fig. 7 I have shown how the press is adapted for use in connection with a roll of copying-paper, instead of a copying-book. To the outer end of the bed or table is secured in any suitable manner a frame *N*, comprising the inclined standards *u u*, which serve to receive and support the roll-journals *v*, and a curved bottom plate or support *w*, upon which the roll rests, the said parts being suitably connected to form a strong and yielding frame. Pivoted to the standards *u u* are the arms *x x*, connected at their outer ends by means of a knife or blade *O*, the said knife being held in its elevated position by means of a spring *P*. The inner ends of the spring are connected to the arms *x*, while the outer portion is made in the form of a bail *y* and is passed around the rear side of the roll, so as to embrace the latter.

The knife or blade *O* is designed to act in conjunction with a fixed blade or knife *Q*, carried by the frame *N*.

When it is desired to sever the paper, the knife *O* is brought down onto the strip of paper coming from the roll, and, acting in conjunction with the fixed knife, cuts the paper. By elevating the knife *O* to the position shown in dotted lines in Fig. 7 the bail *y* is raised up off the paper and permits a new length to be drawn from the roller. As soon as the cutting is completed, the spring returns the knife to its elevated position.

The machine herein shown and described is capable of considerable modification, and I do not wish to be understood as limiting myself to the specific construction and arrangement shown. The idea of effecting the copying by means of an apron winding upon and unwinding from a pressure-roller I claim, broadly, without regard to the remaining fea-

tures of the invention. The same is true of the spring take-up for the apron, which are obviously capable of application to copying-presses differing in many particulars from the press shown.

Having thus described my invention, what I claim is—

1. In a letter-copying press, the combination, with a bed, table, or other device, of a pressure-roller, a copying-apron adapted to wind upon and unwind from the roller as the roller moves back and forth over the table, and means, substantially such as shown and described, for thus moving the roller back and forth over the bed or table.

2. In a copying-press, the combination, with a bed, table, or other device, of a pressure-roller and means for moving it over the table, a water-trough, a spring-roller mounted therein, and an apron secured at one end to the spring-roller and at the other end to the pressure-roller, substantially as shown and described.

3. In a copying-press, the combination, with a bed or table having a depression *o*, of a pressure-roller and means for moving it over the table, a water-trough, a spring-roller, and an apron secured at one end to the spring-roller.

4. In a copying-press, a bed comprising fixed leaf *b* and hinged leaf *a*, in combination with the pressure-roller and apron.

5. In a copying-press, a bed or table comprising the fixed leaf *b*, the hinged leaf *a*, having the toothed bars, in combination with the shaft having the pawls, substantially as shown and described.

6. In combination with the leaves *a* and *b* and the legs *c*, the legs *d*, provided each with an arm *e* and with a pin or screw adapted to enter one of a series of holes in the arm.

7. In combination with leaf *b*, hinged leaf *a*, having a slot, a water-trough secured under the mouth of the latter, the spring-roller, the pressure-roller, and the apron, substantially as shown and described.

8. In combination with a bed or table having rack-bars *n*, the carriage having a shaft *H*, pinions *m m*, and handle or crank *K*, a pressure-roller, and an apron secured to the roller.

9. In combination with a bed or table and

a carriage, the crank *K*, provided with a pin *q*, and the locking-catch having a notch *r*.

10. In combination with a bed or table, the carriage provided with a pressure-roller, an apron, a spring-roller, and a brake block or bar, substantially as shown and described.

11. In a letter-copying press, the combination, with a bed or table, of a pressure-roller mounted thereon, and means for moving the roller over the table, and an impermeable copying-apron secured to the roller and adapted to wind upon and to unwind therefrom as the roller moves back and forth over the table, substantially as shown and described.

12. In a copying-press, the combination, with a bed or table, of a roller and means for turning the same and moving it back and forth over the table, a copying-apron adapted to wind upon and unwind from said roller, and thereby effect the copying, substantially as shown and described.

13. In a copying-press, the combination, with a water-trough and a spring-roller therein, of a copying-apron secured at one end to such roller and winding upon and unwinding therefrom, and a pressure-roller to which the apron is also secured, all substantially as shown and described.

14. In a copying-press, the combination of a bed or table, a pressure-roller, a copying-pad made in the form of an apron and adapted to wind upon and to unwind from a suitable pressure-roller, and means for turning the roller, whereby the moistening and copying are effected simultaneously by the turning of the roller and the winding or unwinding of the apron-pad.

15. In a portable copying-press, the combination, with a bed or table having a water-trough, of a pressure-roller and the set-screws adapted to force the said pressure-roller firmly upon the mouth or throat of the water-trough to prevent the water from escaping therefrom.

In witness whereof I hereunto set my hand in the presence of two witnesses.

DORUS HEALY.

Witnesses:

JAMES F. DUHAMEL,
HORACE A. DODGE.