

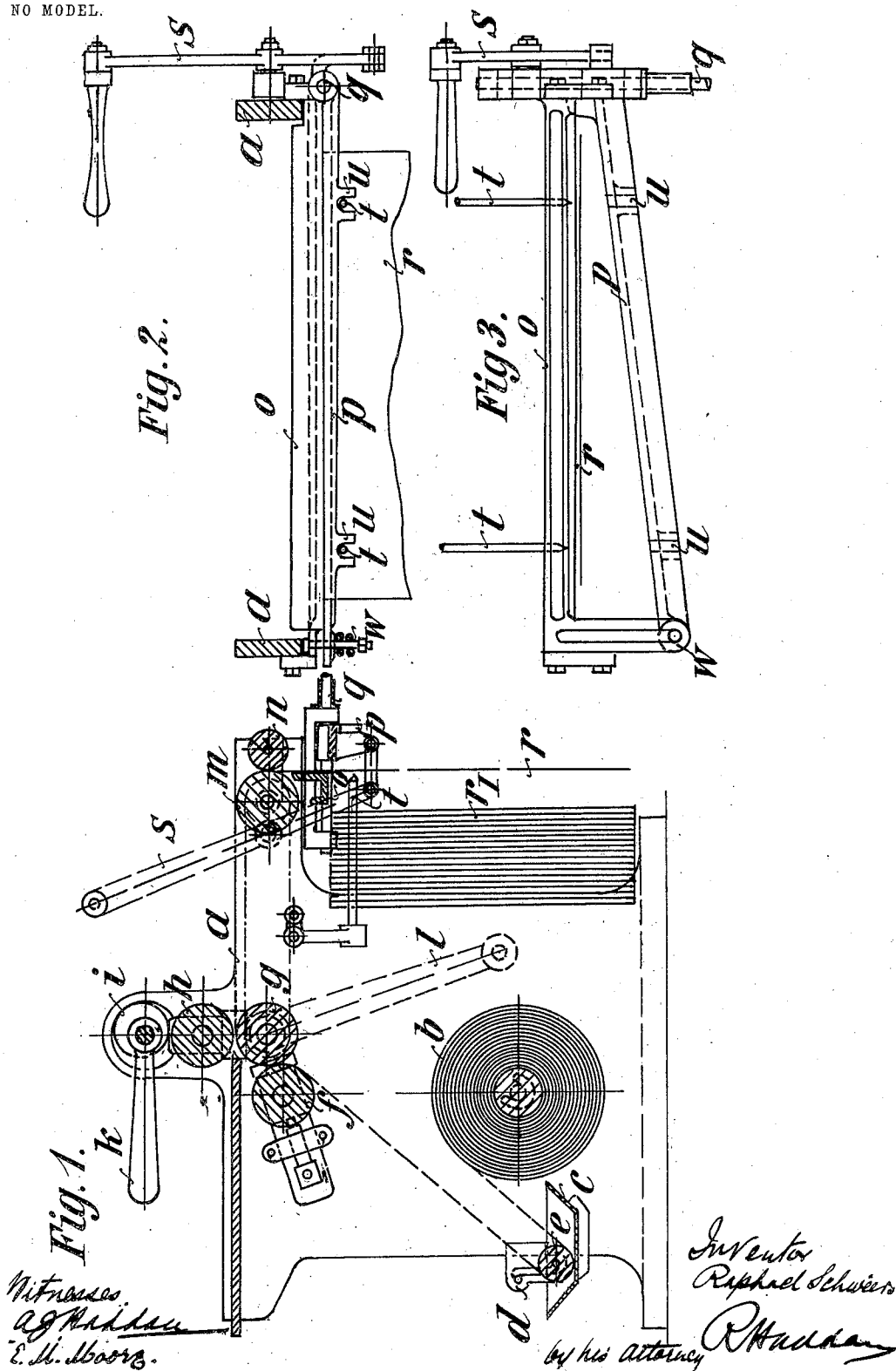
No. 770,321.

PATENTED SEPT. 20, 1904.

R. SCHWÉERS.
COPYING MACHINE.

APPLICATION FILED OCT. 10, 1902.

NO MODEL.



UNITED STATES PATENT OFFICE.

RAPHAEL SCHWÉERS, OF BERLIN, GERMANY.

COPYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 770,321, dated September 20, 1904.

Application filed October 10, 1902. Serial No. 126,800. (No model.)

To all whom it may concern:

Be it known that I, RAPHAEL SCHWÉERS, a subject of the German Emperor, residing at Berlin, N. W., Germany, have invented certain new and useful Improvements in Copying-Machines, of which the following is a specification.

The present invention relates to a copying-machine with a cutting device arranged underneath the paper web which has the advantage that when the copies are cut the originals do not come within reach of the knives. At the same time the position of the knives allows of providing a spiking and skewering device onto which the copies are pushed during the cutting by one of the knives of the cutting device and arranged in succession in such a manner that they form, so to say, an easily removable and replaceable copy-book suspended from the machine. The cutting-knife is so constructed that it will work with wet paper without failing to act under any circumstances. In order to obtain copies of as far as possible equal length, a movable stop is provided at the front of the machine, up to which stop the letters to be copied are pushed before the copies are cut. A mirror or the like is preferably provided in front of the machine in order that the movement of the paper web can be observed from behind. The diameter of the damping-roller is preferably such that a complete number of crank revolutions goes to the length of a letter—that is to say, one or two revolutions, but not fractions of a revolution. Another improvement in the machine is a Z or C shaped slot in connection with the damping device, in which slot the damping-roller is adapted to have bearing at two points, one above the other. By this means the damping-roller can be conveniently removed from the water-tank to dry. The journals of the roller pass through the said slot and are sufficiently long to allow of the provision of knobs or the like at their ends for holding purposes.

In the annexed drawings, Figure 1 is a longitudinal section of the machine. Figs. 2 and 3 are a front view and plan view, respectively, of the specially-constructed knife referred to.

a is a lateral portion of the frame of the machine in which the paper-roller *b* with copy-

ing-paper has bearing. The paper travels over the damping-roller *c* and is moistened in the water-tank *e*. The said roller *c* has bearings in the Z-shaped slot *d*, before referred to. From the roller *c* the paper passes underneath the drying-roller *f* and between the copying-rollers *g* and *h*, which are adapted to be pressed together by means of the cam *i* and lever *k*. After passing the said rollers the paper travels over the guiding-rollers *m* and *n*, which are adapted to be driven by means of the crank *l* to the cutting devices *o* and *p* and finally hangs with the end *r* to the cut and bearing the copies below the knives, which work at a constant cutting angle.

o is the stationary knife, rigidly secured to the frame *a* of the machine, and *p* the rectilinearly-movable knife, which may also be rotatable about the horizontal shaft *q*. The rotatability of the knife *p*, and more particularly the constant cutting angle, which is made not too small, produce with easy working a sharply-defined cut with the result that the latter will cut the thinnest and wettest paper for an indefinite period without requiring to be particularly sharp. The two knives work, preferably, with the broad sides on one another, as they sharpen themselves best in this position. The knives are pressed toward each other by the spring *w* and are operated by means of the lever *s*. The receiving or skewering rods *t*, on which the letters *r* are placed in a stack, pass, during the cutting operation, through the apertures *u* in the movable knife, which act like matrices.

It is obvious that in place of the knives with constant cutting angle described knives can be used with this machine with a fixed fulcrum, which cut the copying paper, or stamps which do not cut the paper, but press it off.

I claim in a press-copying machine—

1. The combination with a framing, of a roll carrying a web of paper, copying-rollers between which the web passes, means for pressing said rollers together, a pair of contacting rollers having their tangent plane of contact vertical, and a two-part cutting device adapted to operate substantially upon a line in said tangent vertical plane below said rollers, substantially as and for the purpose described.

2. The combination with a framing, of a roll carrying a web of paper, copying-rollers between which the web passes, means for pressing said rollers together, a cutting device located laterally of the plane tangential to both copying-rollers, and consisting of two knives, one fixed to the frame and the other adapted to be parallelly moved toward the fixed knife, and rotatable on an axis in the plane of its movement, means for operating said movable knife, and means for guiding the web to the cutting device, substantially as described.

3. The combination with a framing, of a roll carrying a web of paper, copying-rollers between which the web passes, means for pressing said rollers together, a cutting device placed below the horizontal plane of movement of the paper web, means for operating said cutting device, a spiking or skewering device below the cutting device onto which the cut sheets of paper are forced by said cutting device, during the cutting operation, and means for guiding the web to the cutting device, substantially as described.

4. The combination with a framing of a roll carrying a web of paper, copying-rollers between which the web passes, means for pressing said rollers together, a cutting device placed below the horizontal plane of movement of the paper web and consisting of two knives one fixed to the frame and the other adapted to be parallelly moved toward the fixed knife and rotatable in a plane vertical thereto, means for operating said movable knife, a spiking or skewering device below the knives onto which the cut sheets of paper are forced by said movable knife during the cutting operation, and means for guiding the web to the cutting device, substantially as described.

5. The combination with a framing of a roll carrying a web of paper, a damping device consisting of a tank and a roller therein adapted to have bearing at two points one above

the other, copying-rollers between which the web passes, means for pressing said rollers together, a cutting device placed below the horizontal plane of movement of the paper web and consisting of two knives one fixed to the frame and the other adapted to be parallelly moved toward the fixed knife, and rotatable in a plane vertical thereto, means for operating said movable knife, a spiking or skewering device below the knives onto which the cut sheets of paper are forced by said movable knife during the cutting operation, means for guiding the web to the cutting device, and a stop up to which the original letters are advanced before the copies are cut substantially as described.

6. The combination with a framing of a roll carrying a web of paper, a damping device consisting of a tank and a roller therein adapted to have bearing in slotted brackets at two points one above the other, copying-rollers between which the web passes, means for pressing said rollers together, a cutting device placed below the horizontal plane of movement of the paper web and consisting of two knives one fixed to the frame and the other adapted to be parallelly moved toward the fixed knife, and rotatable in a plane vertical thereto, means for operating said movable knife, a spiking or skewering device below the knives onto which the cut sheets of paper are forced by said movable knife during the cutting operation, means for guiding the web to the cutting device, a stop up to which the original letters are advanced before the copies are cut, and a mirror for use in observing the movement of the paper web substantially as described.

In witness whereof I have signed this specification in the presence of two witnesses.

RAPHAEL SCHWÉERS.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.