

No. 721,338.

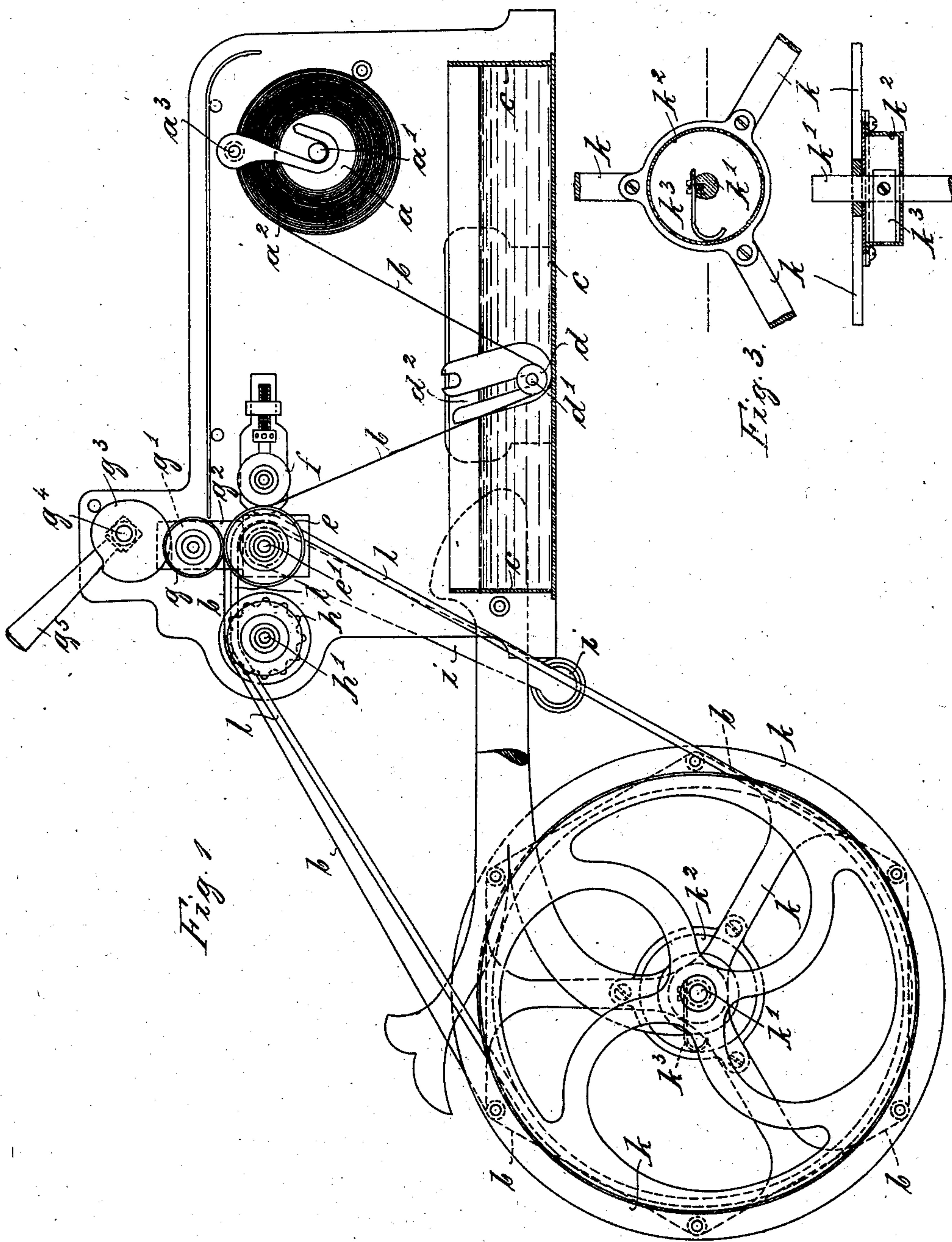
PATENTED FEB. 24, 1903.

F. SOENNECKEN.
COPYING MACHINE.

APPLICATION FILED JULY 17, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



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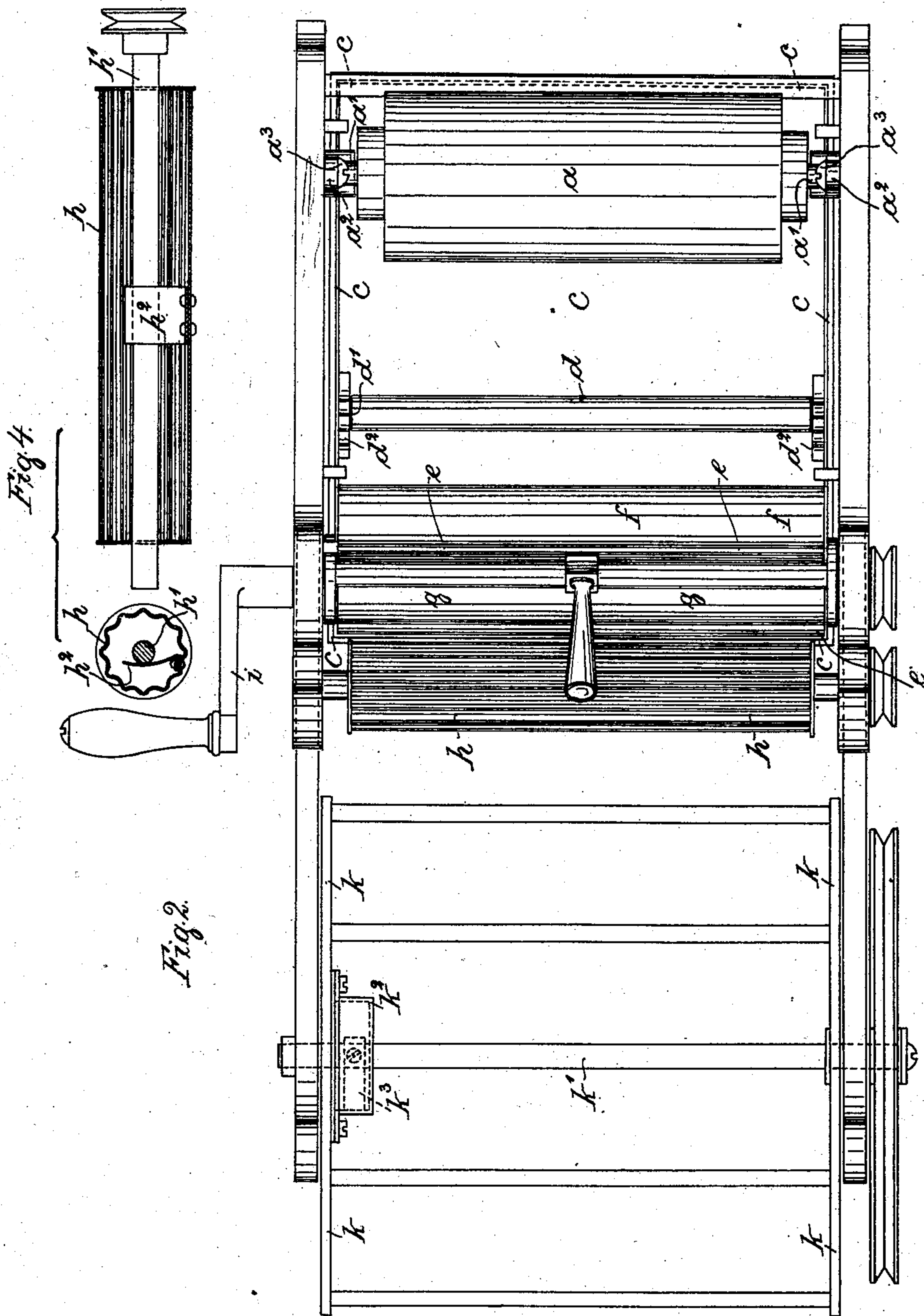
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRIEDRICH SOENNECKEN, OF BONN, GERMANY.

COPYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,338, dated February 24, 1903.

Application filed July 17, 1901. Serial No. 68,693. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH SOENNECKEN, a subject of the King of Prussia, German Emperor, and a resident of Bonn-on-the-Rhine, in the Province of the Rhine, German Empire, have invented certain new and useful Improvements in Copying-Machines, of which the following is an exact specification.

My invention relates to improvements in copying-machines provided with endless paper-rolls, and has especially for its purpose to avoid the tearing of the paper.

In the copying-machines hitherto used the bearings of the supply-roll, as well as of the guide-roller situated in the water for moistening the paper, were rigidly fixed to the frame of the machine. Hereby in using the copying-machine sometimes resistances in the movement occurred which, though small, were sufficient for tearing the paper. On the other hand a great danger of tearing the paper arose near the winding-up roller, especially on account of the paper being moistened, and therefore very soft. This winding-up roller was rotated in the same way as the guide-roller, by means of belts, gearings, or the like from the copying-roller. Now in case the circumferential velocity of the winding-up roller was not exactly the same as that of the copying-roller, which always occurred in case several layers of paper were wound up already, the paper was torn, or in case it consisted of several sheets connected one to the other these sheets were easily separated. These disadvantages are done away with by the construction forming the object of the present invention, in which construction all the rollers, especially the supply-roll and the winding-up roller, are journaled in that way that they follow the slightest draw, so that a tearing of the paper is perfectly avoided. The supply-roll is therefore journaled in pendulum-rods, while the guide-roller situated in the water for moistening the paper is journaled in slots. The winding-up roller or drum and the guide-roller leading the paper from the copying-roll to the winding-up roll or drum are journaled loosely upon shafts and are rotated by means of elastic friction-couplings. In order to make my invention more clear, I refer to the accompanying drawings, in which—

Figure 1 is a vertical section of the machine. Fig. 2 is a plan view of the same, while Figs. 3 and 4 are detail views of parts of the machine.

The general construction of the copying-machine is the same as that of the copying-machines hitherto used.

From the supply-roll *a* the endless paper *b* runs over the guide-roller *d*, situated within the water-trough *c*. From there it is led between the roller *e* and the pressing-roller *f*. Upon the roller *e* a second pressing-roller *g* is situated, which pressing-roller is journaled in slide-pieces *g'*, guided in slots *g²*. The slide-pieces *g'* can be pressed down by means of eccentrics *g³*, fixed to an axle *g⁴*, which axle can be turned by means of a handle *g⁵*. After having passed between the rollers *g* and *e* the paper *b* is led over the leading-roller *h* to the winding-up roller or drum *k*. The machine is driven by means of a crank *i*, fixed to the axle *e'* of the roller *e*. The leading-roller *h*, as well as the drum *k*, is rotated by means of the round belt *l*. The pivots *a'* of the supply-roll *a* are journaled in hooks *a²*, pivoted at *a³*. The pivots *d'* of the guide-roller *d* are situated within slots *d²*. Now in case a drawing of the paper takes place, to which drawing the supply-roll does not follow immediately, a double surety against the tearing of the paper is created by the new arrangement. First, the supply-roll *a* can oscillate around the pivot *a³*, and, second, the guide-roller *d* can be raised within the slots *d²*.

The pull of the paper can be regulated by means of the weight of the guide-roller *d* and the position of the slots *d²*.

The leading roller *h* is loosely arranged upon the shaft *h'* and is rotated by means of a spring *h²*, fixed to the same, which spring presses against the shaft *h'*. (See Fig. 4.) In a similar way the winding-up drum *k* is connected with its shaft *k'*. (See Fig. 3.) A projecting ring *k²* is fixed to one side of the drum. Within this ring a spring *k³* slides, which spring is fixed to the shaft *k'*, so that in case the shaft *k'* rotates this rotation is imparted to the drum *k* by means of the friction between the spring *k³* and the ring *k²*.

By means of the roller *h* and the drum *k* being connected to their shafts in the manner described above it is attained that in case the

pull of the paper surpasses a certain limit the friction-couplings begin to slide, hereby avoiding a tearing of the paper.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is—

1. In a copying-machine, the combination with a copying-roller, of a supply-roller journaled in pendulum-rods, a guide-roller guided in slots and a leading-roller loosely arranged upon a shaft and coupled to the same by means of a friction-coupling, substantially as described and for the purpose set forth.

2. In a copying-machine, the combination with a copying-roller, of a supply-roller jour-

naled in pendulum-rods, a guide-roller journaled in slots, a leading-roller loosely arranged upon a shaft and coupled to the same by means of a friction-coupling, and a winding-up drum loosely arranged upon a shaft and rotated by means of a friction-coupling, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRIEDRICH SOENNECKEN.

Witnesses:

CARL SCHMITT,

CHARLES LESIMPLE.