

No. 848,065.

PATENTED MAR. 26, 1907.

H. STAMM.
PRINTING MACHINE.
APPLICATION FILED OCT. 12, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

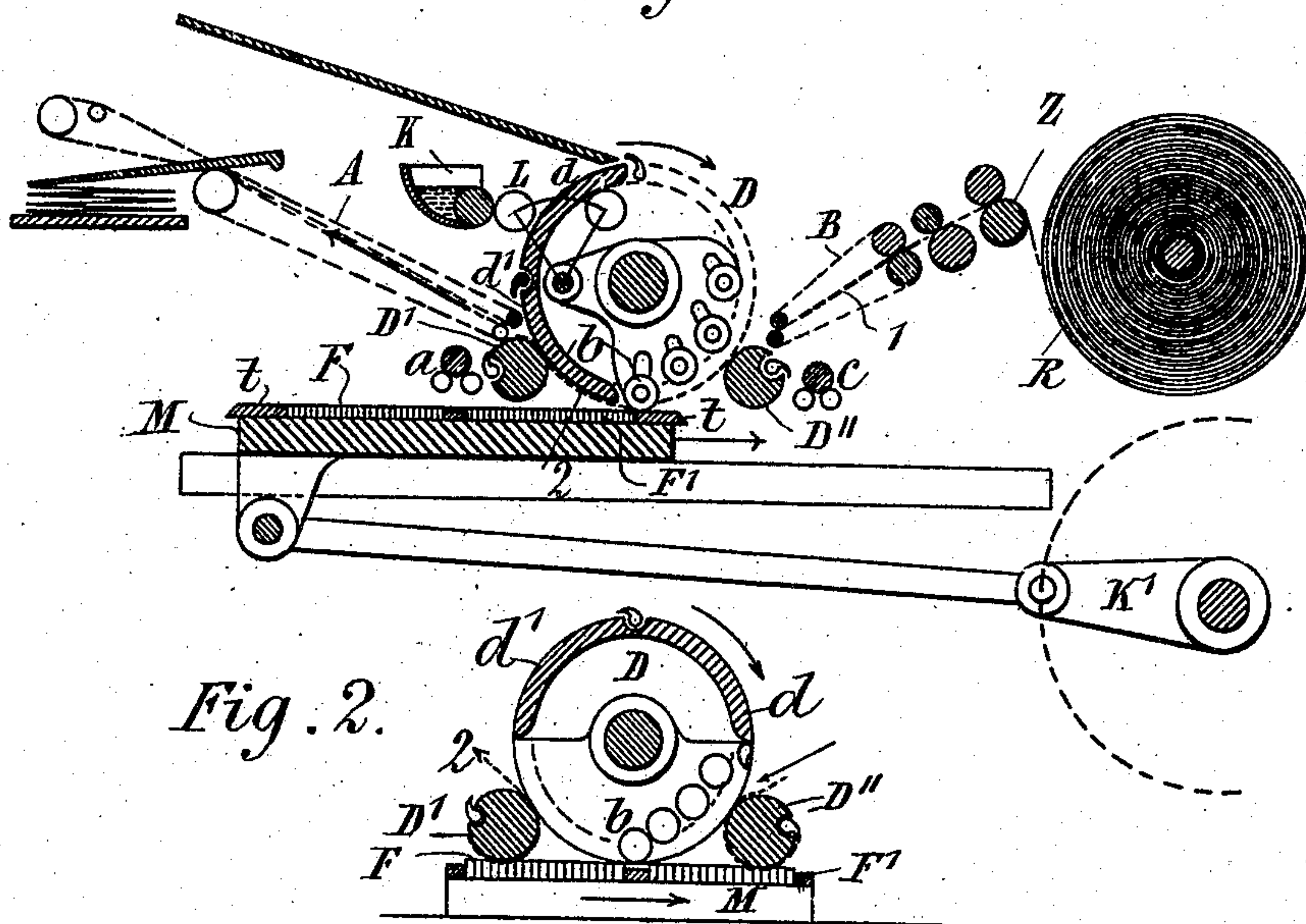


Fig. 2.

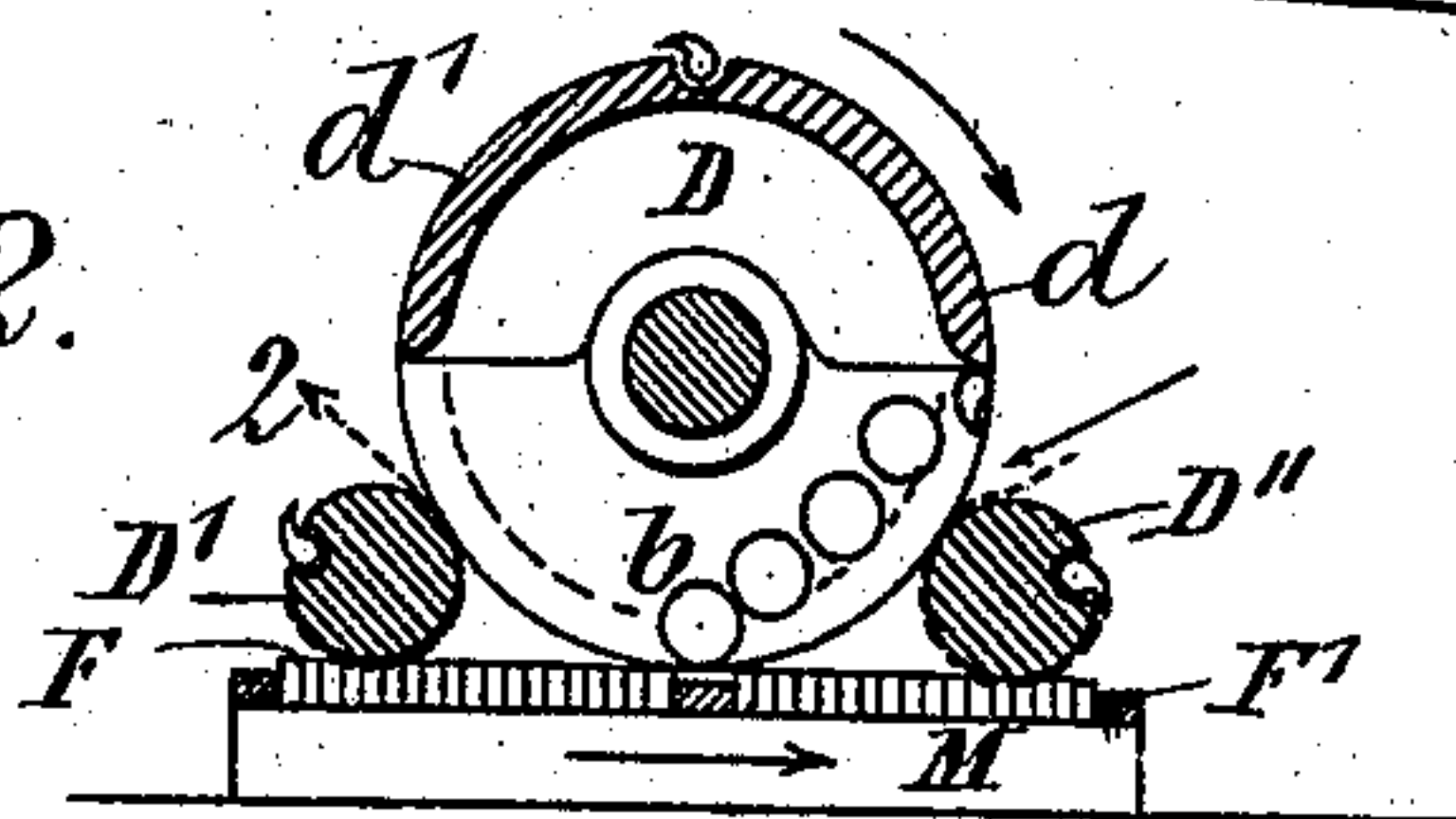


Fig. 3.

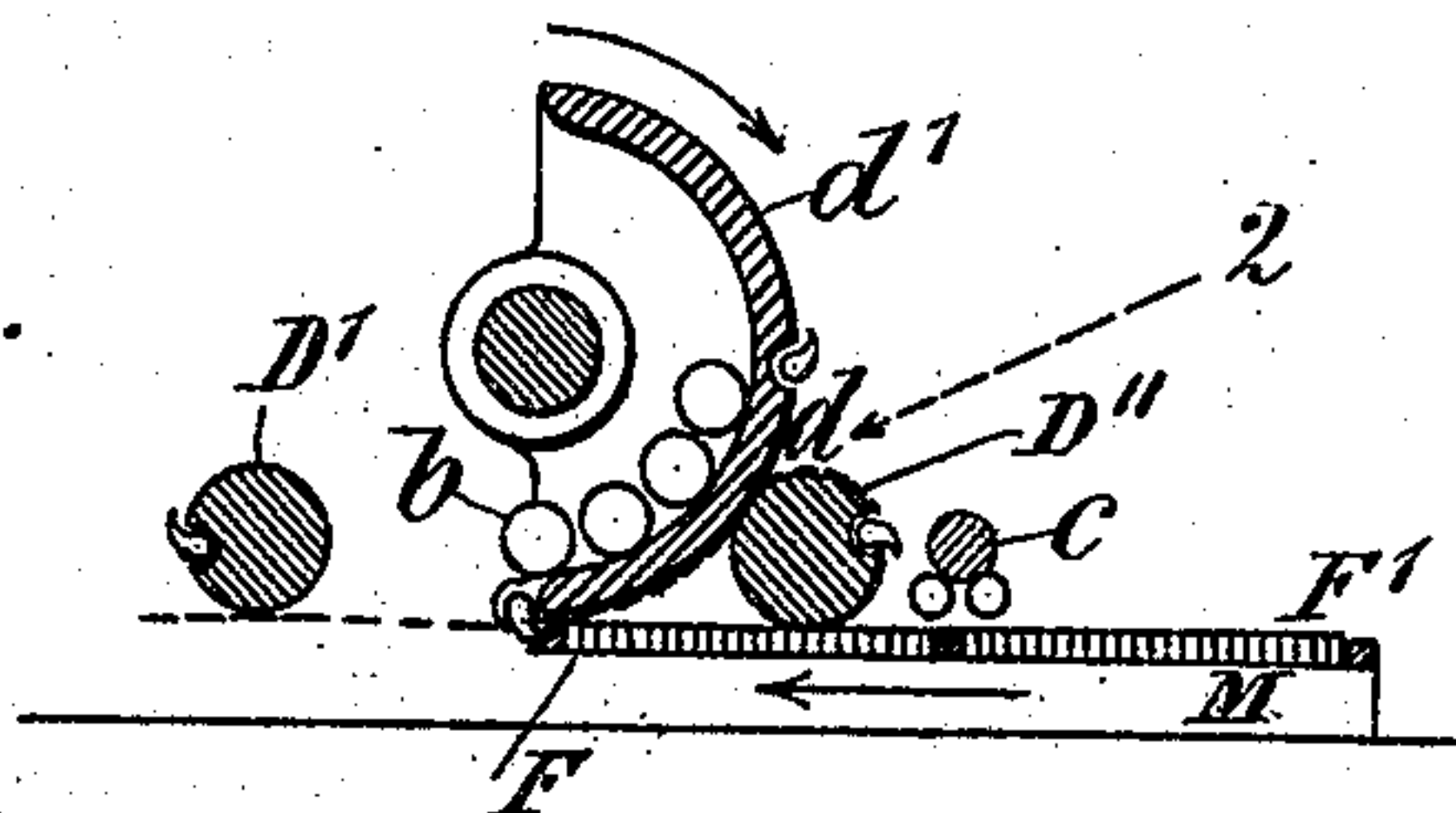
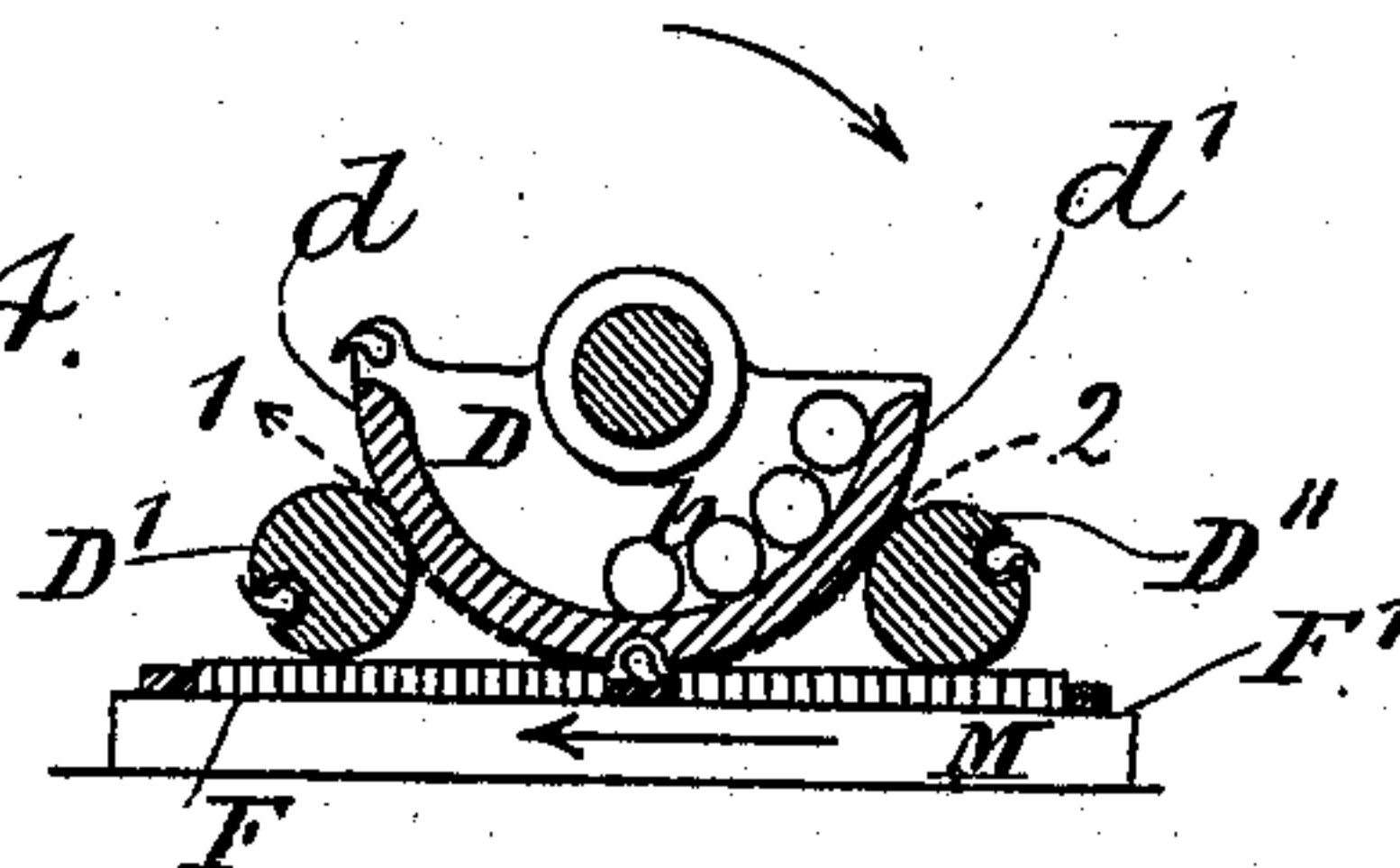


Fig. 4.



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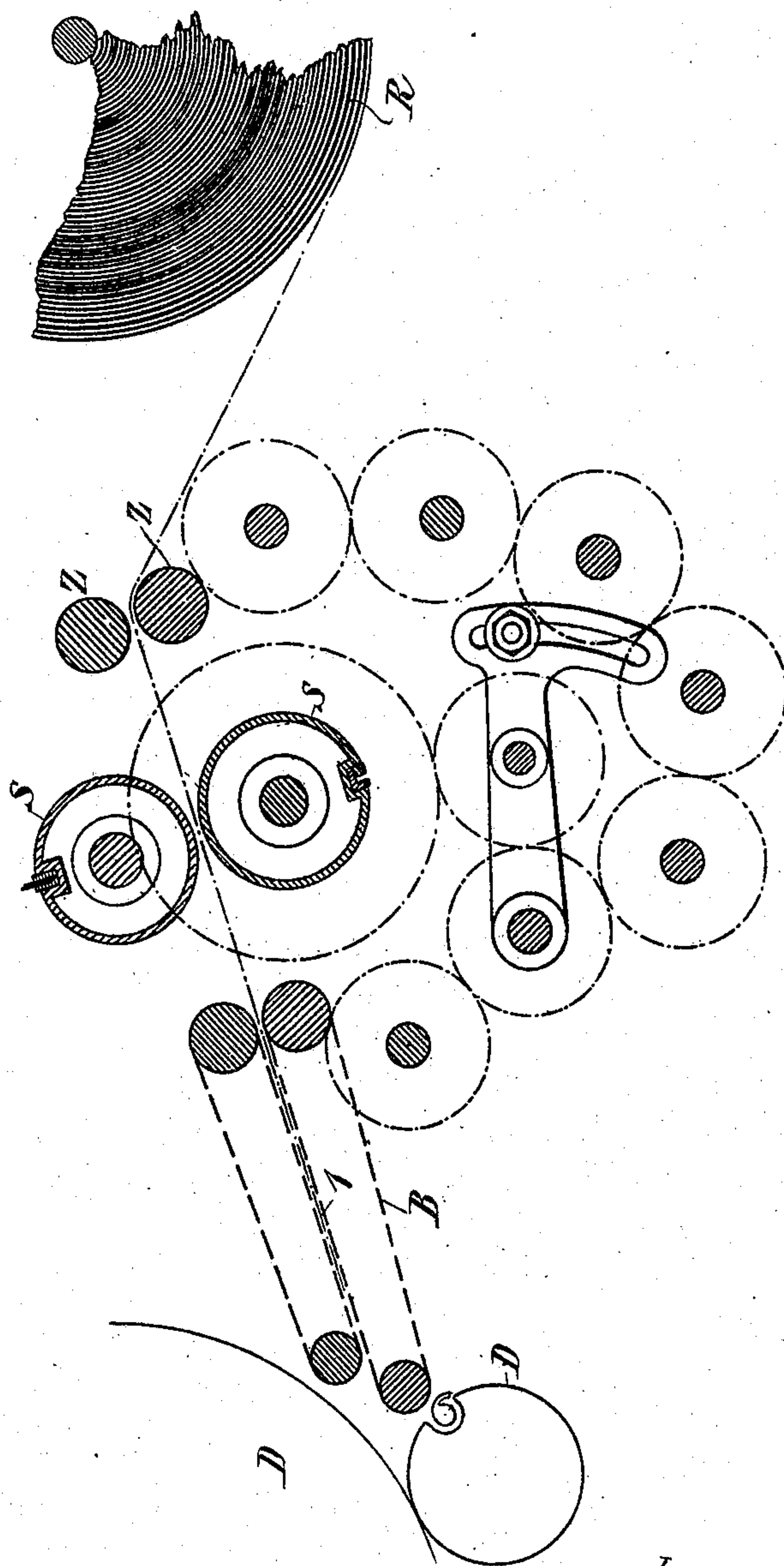
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2 SHEETS—SHEET 2.

Fig. 5.



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PRINTING-MACHINE.

No. 843,065.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed October 12, 1906. Serial No. 338,664.

To all whom it may concern:

Be it known that I, HENRY STAMM, engineer, a citizen of the Swiss Republic, residing at Rentzschmuhle, by Jocketa, Saxony, Germany, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

This invention relates to a machine for continuously printing paper on both sides from a flat form.

Figure 1 is a diagrammatic vertical section of the machine, and Figs. 2, 3, and 4 are diagrams showing the parts in different positions. Fig. 5 shows the feed and cutting mechanism to a larger scale.

The table M carries two forms F and F' for printing and perfecting and is reciprocated by a crank K' or any other ordinary mechanism. There are three impression-cylinders—namely, two smaller ones, D' and D'', with a circumference of about one maximum sheet length, D', working on the form F, and the other, D'', working on the form F', while the larger cylinder D works on both forms. These three impression-cylinders are geared together and rotate continuously. The large cylinder D has a circumference equal to four maximum sheet lengths. The cylinder D is in contact with the forms when the latter are moving in one direction, and the two smaller ones, D' D'', are in contact with them during their return. The large cylinder D rotates in fixed bearings, and the forms on their return pass it without touching, one-half of the cylinder being cut away, while the two small cylinders D' D'' are slightly lifted when the forms are moving from left to right, so that they do not touch them.

Figs. 1, 2, 3, and 4 show the positions of the forms and printing-cylinders in four different phases.

The machine may be fed either by hand or from the reel R. The paper coming from the latter is, if variable sizes are to be printed, led between a pair of rollers Z and then cut in sheets by a pair of cutting-rollers S and carried by short tapes B to the nip of the cylinders D' D''. The sheet 1 is there seized (in the position Fig. 1) by the grippers of the small cylinder D'' and is printed during the movement of the form F', as indicated by the arrow, Figs. 1 and 2. The sheet 1 thus print-

ed on one side is then carried to the printing-surface d of the cylinder D and is seized by grippers, and the perfecting printing commences at the end position of the forms, as shown in Fig. 3, while the succeeding sheet 2 is shortly afterward seized by the grippers of the second printing-surface d' of the large cylinder D. The printing of sheet 2 commences on form F', as shown in Fig. 4, at the center position of the forms. Fig. 1 shows how sheet No. 1, having been printed on both sides, enters the tapes A, which lead it away to a pile or into a folding apparatus, as the case may be. Sheet 2, which has been printed on one side during the passage from position in Fig. 4 into the position Fig. 1, is then seized by the grippers on the small cylinder D' and comes into the position shown in Fig. 2. Then during the return movement of the forms sheet 2 receives the perfecting print on form F, as shown in Fig. 2. It leaves the cylinder D' to pass onto the tapes A, similarly to the first sheet. Therefore in each revolution of the large cylinder D, or one revolution of the crank K', or one complete reciprocation of the forms two sheets are printed on both sides. In consequence of the short travel of the forms the inking involves some difficulty. For this purpose three groups of form-rollers a b c, Fig. 1, are provided.

The two outer groups a and c do not differ from those usually used in cylinder printing-presses and would suffice for ordinary newspaper work, group a inking the form F and group c the form F'. These two roller groups, however, would only ink the forms once for each two impressions. With the assistance of the third group b both forms are inked once for each impression. This center group of form-rollers is placed inside the large impression-cylinder D. During the printing period of this cylinder, Fig. 4, these rollers are lifted and run on the inner surface of the same, which serves as a distributing-table. In the position Fig. 1 the form-roller b (or two form-rollers might be used instead of one) is lowered and commences to ink the forms one after the other, as is shown in the two next positions, Figs. 2 and 3. In the latter position the printing by the large cylinder again commences, and the form-roller b again runs on the inner surface. This

inner surface receives the ink from a swinging roller L from the duct K outside the cylinder, but which might be fixed inside it, or the cylinder itself might serve as the ink-receiving roller and a duct be fixed to it.

The ink may be fed to the outer form-rollers *a* and *c* by tables *t t*, Fig. 1, or by separate ducts fixed on the right and left, respectively.

The grippers may be replaced by other means, such as tapes, points, air suction, or the like.

Smaller sheets than the maximum size, which is equal to the circumference of the small printing-cylinders *D' D''*, can be printed both from endless webs and from sheets without changing the cylinders or other mechanism, except the feed, because all three cylinders always rotate in the same direction, and the heads of the sheets consequently always come to the same place.

If the two small impression-cylinders *D' D''* are removed, the machine may be used as an ordinary sheet-printing machine for double-size sheets, which can be presented at the dead-points to the grippers of the large cylinder *D*, which always stops for a moment at the dead-points, or they may be fed from the reel.

It is not absolutely necessary for the large impression-cylinder to be in the proportion of four to one of the smaller ones. Other proportions may be chosen; but the register of print and perfecting print could not be obtained with ordinary gearing, and it would be necessary to obtain increased and decreased speeds by means of oval cog-wheels or other mechanism.

What I claim is—

1. The combination of a pair of reciprocating forms, a continuously-revolving segmental impression-cylinder provided with a pair of impression-surfaces coming successively into contact with the forms when they are moving in one but not in the reverse direction and a pair of continuously-revolving impression-cylinders each coming into contact

with one of the forms when it is moving in the reverse direction.

2. The combination of a pair of reciprocating forms, a continuously-revolving segmental impression-cylinder provided with a pair of impression-surfaces coming successively into contact with the forms when they are moving in one but not in the reverse direction and a pair of continuously-revolving impression-cylinders each of one-fourth the diameter of the first cylinder and each coming into contact with one of the forms when it is moving in the reverse direction.

3. The combination of a pair of reciprocating forms, a continuously-revolving segmental impression-cylinder provided with a pair of impression-surfaces coming successively into contact with the forms when they are moving in one but not in the reverse direction, a pair of continuously-revolving impression-cylinders each coming into contact with one of the forms when it is moving in the reverse direction, means for supplying ink to the inner surface of the said segmental cylinder, a distributing-roller spreading the ink on this surface and means for transferring the ink from the said surface to the forms.

4. The combination of a pair of reciprocating forms, a continuously-revolving segmental impression-cylinder provided with a pair of impression-surfaces coming successively into contact with the forms when they are moving in one but not in the reverse direction, a pair of continuously-revolving impression-cylinders each of one-fourth the diameter of the first cylinder and each coming into contact with one of the forms when it is moving in the reverse direction, means for supplying ink to the inner surface of the cylinder, a distributing-roller spreading the ink on this surface and means for transferring the ink from it to the forms.

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