

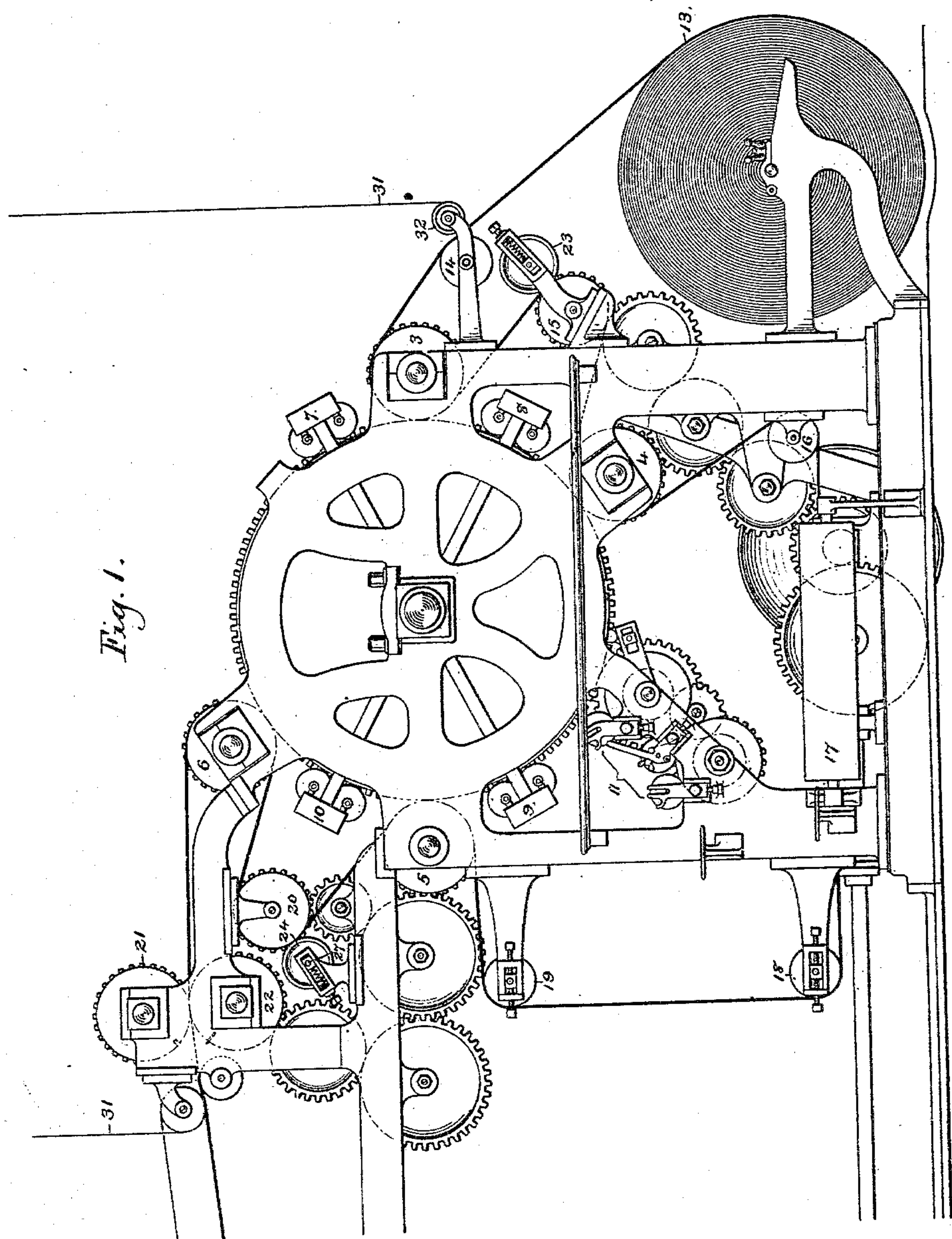
(No Model.)

2 Sheets—Sheet 1.

J. P. VIENOT.
WEB PRINTING MACHINE.

No. 274,534.

Patented Mar. 27, 1883.



Witnesses:

A. N. Jastera
Geo. H. Graham

Inventor:

Jules P. Vienot,
by *Munson & Philipp*
Attys.

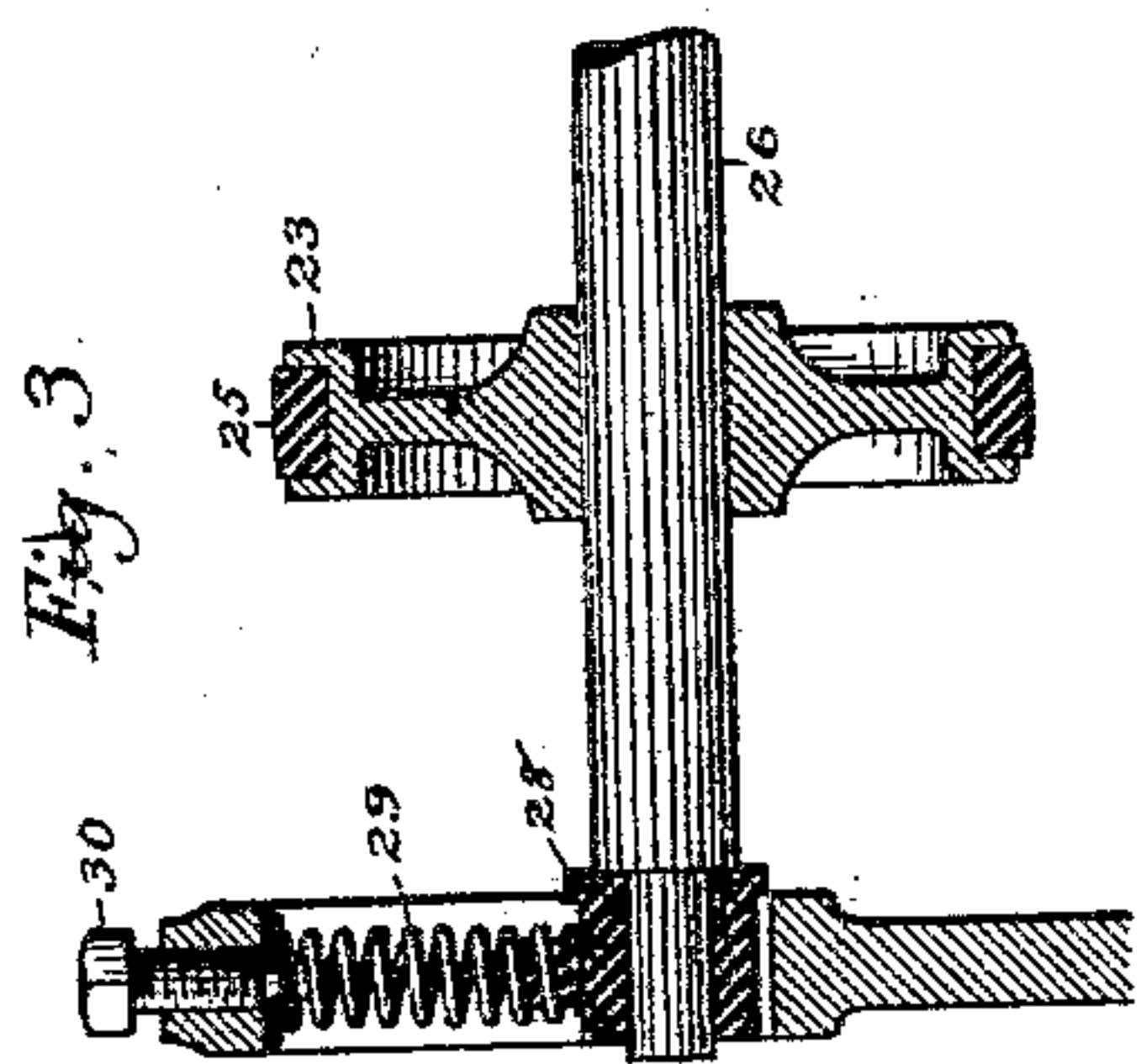
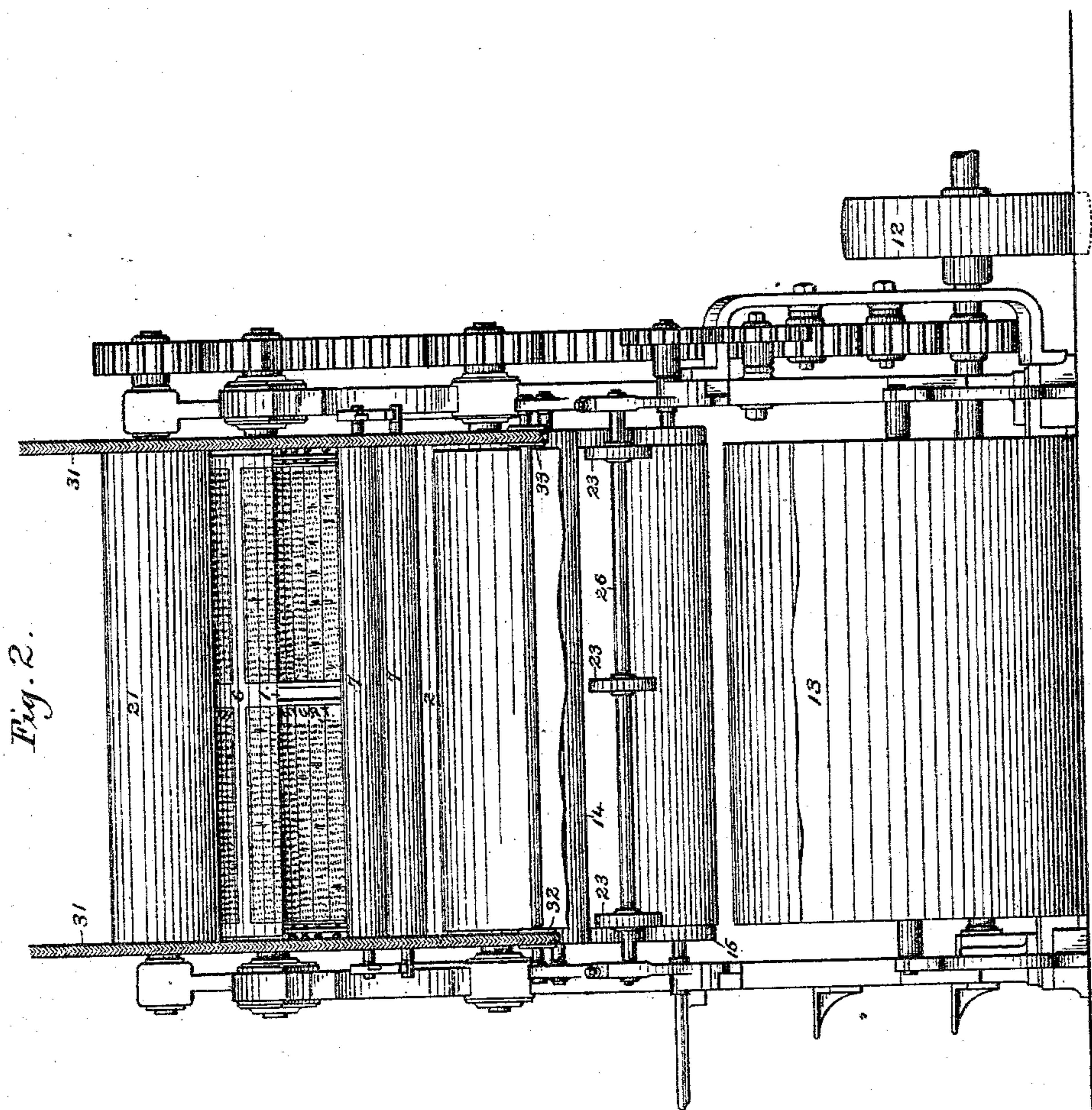
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UNITED STATES PATENT OFFICE.

JULES P. VIENOT, OF NEW YORK, N. Y., ASSIGNOR TO R. HOE & CO.,
OF SAME PLACE.

WEB-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 274,534, dated March 27, 1883.

Application filed October 26, 1882. (No model.) Patented in England October 3, 1881, No. 4,285.

To all whom it may concern:

Be it known that I, JULES P. VIENOT, a citizen of the United States, residing in the city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Web-Printing Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

In order to produce newspapers at the speed required by most of the large establishments of the present day, it is necessary to use rotary mechanism and to print upon the paper while in the web, and it is also often desirable, for various reasons, but particularly to save the delay and expense incident to stereotyping, to print directly from the type, instead of from stereotype-plates. When the printing is done directly from the type it is necessary to make the type or form cylinder of a comparatively large size, as in practice it is found impossible to successfully secure ordinary parallel type onto a cylinder as small as those commonly employed in web-printing machines which print from stereotype-plates.

In order to secure economy and compactness in the structure of machines of this class, it has also been found desirable to use but a single type-cylinder, and to arrange in succession around its circumference the forms for printing both sides of the sheet, and provide a plurality of impression-cylinders, so that by turning the web and re-presenting it to the type-cylinder both of its sides may be successively printed from the same forms. When a cylinder of sufficient size to successfully carry the forms in type is used, it will be found so large that the forms for printing both sides of an ordinary folio or four-page paper will occupy very much less than its whole circumference. This fact makes it necessary, in order that the web may have a continuous and uniform feed, to provide the form-cylinder with register-rolls and an increased number of impression-cylinders, so the forms will be enabled to make two or more impressions upon each side of the web at each revolution of the form-cylinder.

In machines of this class as heretofore constructed great difficulty has been experienced, owing to the intermittent action of the print-

ing mechanism, in securing a regular and uniform feeding of the web, so as to secure a perfect register of the impressions.

It is the object of the present invention to cure this defect; and to that end the invention consists in certain details of construction, which will be hereinafter fully explained and particularly pointed out.

In the accompanying drawings, Figure 1 is a side elevation of a web-perfecting printing mechanism of the class specified, embodying the present invention. Fig. 2 is an end elevation of the same. Fig. 3 is a sectional detail, to be hereinafter referred to.

The machine shown in the drawings is a single double-width machine—that is to say, it operates upon only a single web of paper, but has its cylinders, rolls, &c., of sufficient length to receive two forms of type abreast.

The type-cylinder 1, which is of the usual construction, and of sufficient size to permit the forms of type to be securely fastened to its periphery, is mounted in bearings in an appropriate frame in the usual manner, and is provided upon its opposite sides with means for carrying two groups of forms, each of which occupies one-fourth of its circumference, the portions of the cylinder between the forms being occupied by ink-distributing tables 2.

Mounted at suitable points around the type-cylinder are the four impression-cylinders 3, 4, 5, and 6 and ink-distributing and form-rolls 7, 8, 9, and 10, the ink for the impressions being supplied to the distributing-tables by ink-ing mechanism, as 11, of any approved form.

Motion is communicated to the various parts of the printing mechanism from the belt-pulley 12 through a train of connecting-gears arranged in the usual manner, which is so well understood as to require no specific description.

The web of paper contained in the roll 13, after passing over guide-roll 14, is led around the impression-cylinder 3, thence outward around register-roll 15, and thence inward around the second impression-cylinder, 4. As has already been stated, the forms cover only one-half the surface of the type-cylinder, and it therefore becomes necessary, in order that the whole surface of the web may be printed, that each form should act twice upon the web at each revolu-

tion of the cylinder. This is accomplished by the two impression-cylinders 3 4 and the register-roll 15, in the manner described in United States Letters Patent No. 9,987, of September 6, 1853, and well understood in the art. After leaving cylinder 4 the web passes around roll 16 and around a web-turner, 17, of the construction shown in United States Letters Patent No. 212,880, by which it is turned, so as to present its unprinted side to the type-forms, after which it passes around the adjustable register-governing rolls 18 19 to the impression-cylinder 5. It passes around cylinder 5, outward around register-roll 20, and then inward around impression-cylinder 6, these last two cylinders and the roll 20 operating to print its second side in the same manner as the first was printed by the cylinders 3 4 and roll 15. After being printed the web passes to the cutting-rolls 21 22, to be severed into sheets, which may then be delivered in any approved manner.

In printing a web by a mechanism such as that just described, it is of course apparent that no one of the impression-cylinders is continuously in contact with the forms, and that there are times when all of them will be out of contact. This intermittent action of the printing devices has been found to cause such an irregular feeding of the web that it is impossible to secure accurate registration between the different impressions. To cure this defect, and to secure a positive and continuously-acting feeding mechanism, register-rolls 15 20 have been provided with co-operating forwarding-rolls 23 24, the peripheries of which are provided with rubber coatings 25, as shown in Fig. 3, or otherwise made slightly yielding. These forwarding-rolls, which are preferably so arranged as to bear only upon the margins of the web, are mounted upon shafts 26 27, which are supported in sliding journal-boxes 28, and are constantly pressed inward by springs 29, the tension of which is controlled by set-screws 30, so that any desired amount of pressure may be obtained. The register-rolls 15 20 are positively driven by trains of gearing connecting them with the impression-cylinders, and the forwarding-rolls may be geared to the register-rolls or not, as may be found desirable in any particular case. By reason of these positive feeding mechanisms, located so as to act upon the web while passing from one impression-cylinder to another, it will be continuously and uniformly fed forward, and a correct register will be secured, regardless of the feeding action of printing mechanism.

It will readily be seen that in a machine of the construction herein shown considerable difficulty will be experienced in "threading" or conducting the leading end of the web through the

machine. To aid in this operation a tape, 31, is provided, which passes around the pulley 32, just outside the edge of the web, and follows its course through the machine. In passing around the turner 17 the tape will be led across the machine, so that it will emerge from between the cutting-rolls upon the opposite side of the machine from that at which it entered. From this point it will pass around suitably-located leading-pulleys (not shown) to the pulley 33, from which it will again pass through the machine. In passing the second time around the turner 17 it will be led back to the side of the machine at which it originally entered, so that after passing the cutting-rolls it will pass around suitably-located pulleys back to the point of starting.

When the machine is to be "threaded" the leading end of the web will be brought up to the tape at the roll 14, and a stout thread will be secured to the tape at one side of the web, passed through and across the web in a series of stitches, and then secured to the tape at the other side. The machine can then be started slowly, and the end of the web will be carried forward and through the machine. When the end of the web has passed the cutting-rolls the thread will be removed or broken and the machine will be ready for operation. The threading-tape, arranged and operating as just described, does not, however, form any part of the present application, as it is the invention of another.

What I claim is—

1. The combination, with a form-cylinder provided with a plurality of impression-cylinders, whereby each form makes a plurality of impressions upon the web at each revolution of the form-cylinder, of positively-acting web-feeding mechanism arranged to act upon the web as it passes from one impression cylinder to another, all substantially as described.

2. The combination, with the type-cylinder, of the impression-cylinders, as 3 4 and 5 6, register-rolls, as 15 20, and co-operating forwarding-rolls, substantially as described.

3. The combination, with a type-cylinder, as 1, provided with a plurality of impression-cylinders, of web-feeding mechanism located between said impression-cylinders, and consisting of a register-roll and co-operating forwarding-roll provided with a yielding periphery, all substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JULES P. VIENOT.

Witnesses:

CHAS. W. CARPENTER,
JOHN HERRON, Jr.