

(No Model.)

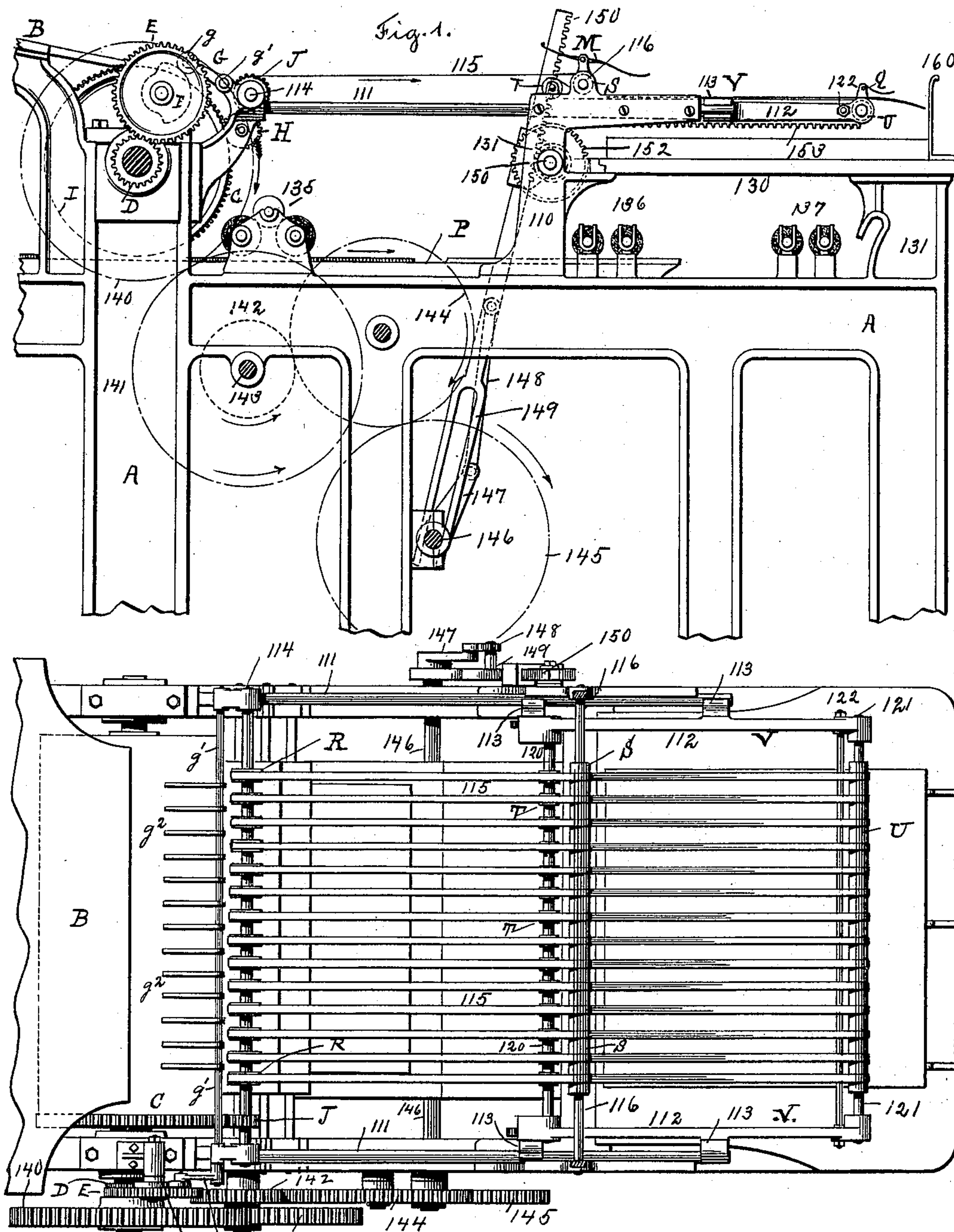
2 Sheets—Sheet 1.

H. A. W. WOOD.

DELIVERY MECHANISM FOR PRINTING PRESSES.

No. 594,054.

Patented Nov. 23, 1897.



Witnesses E G
Chas. F. Fitzmaurice
E. M. Healy.

Fig. 2.

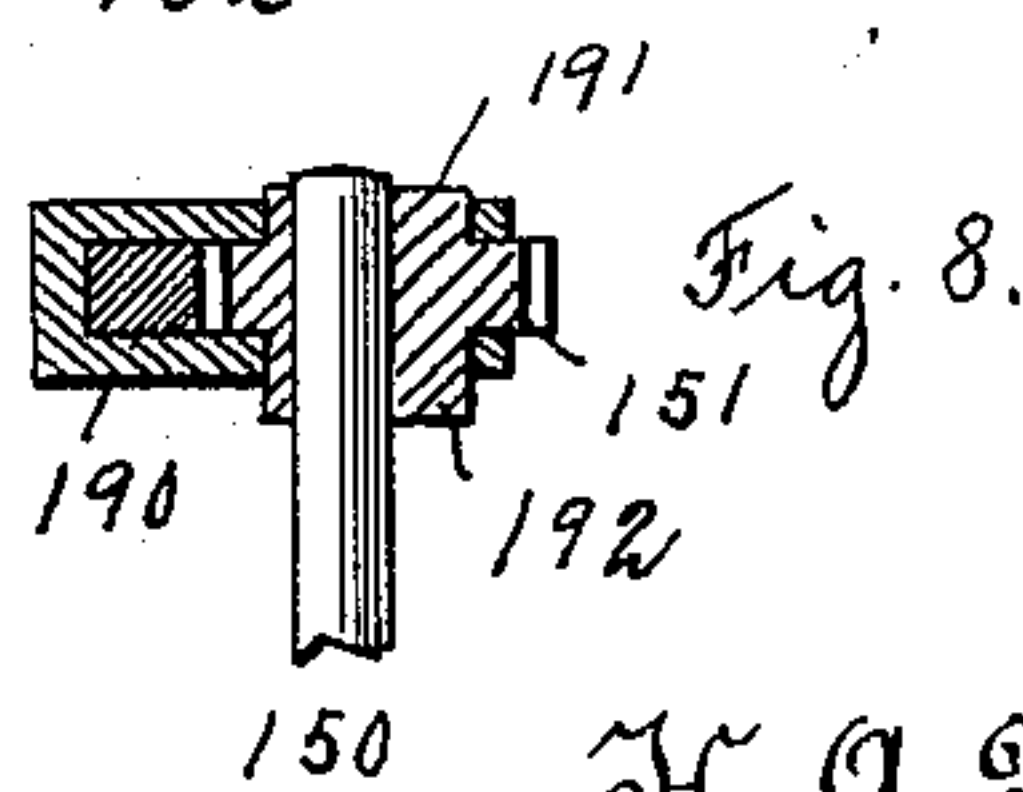
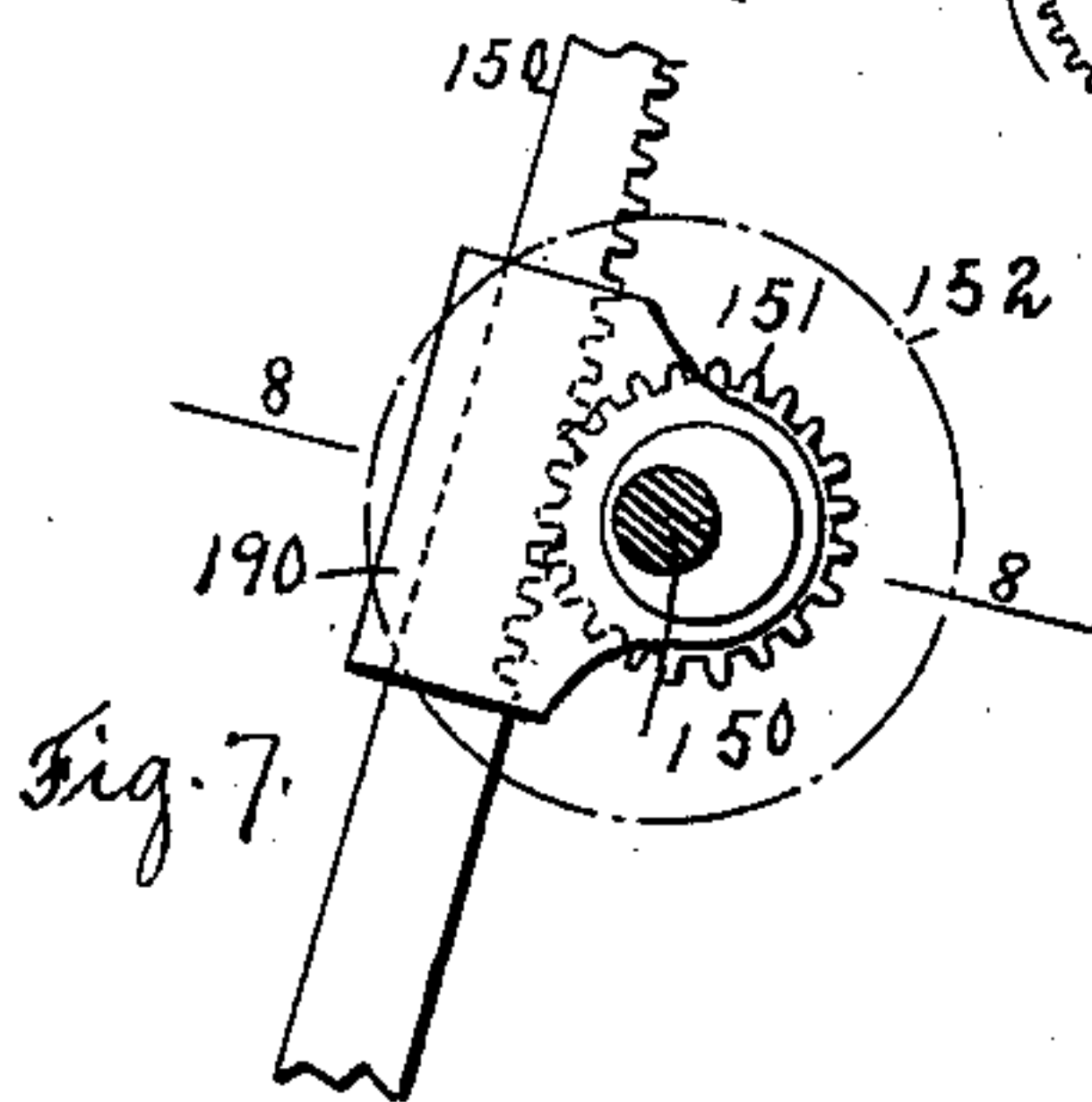
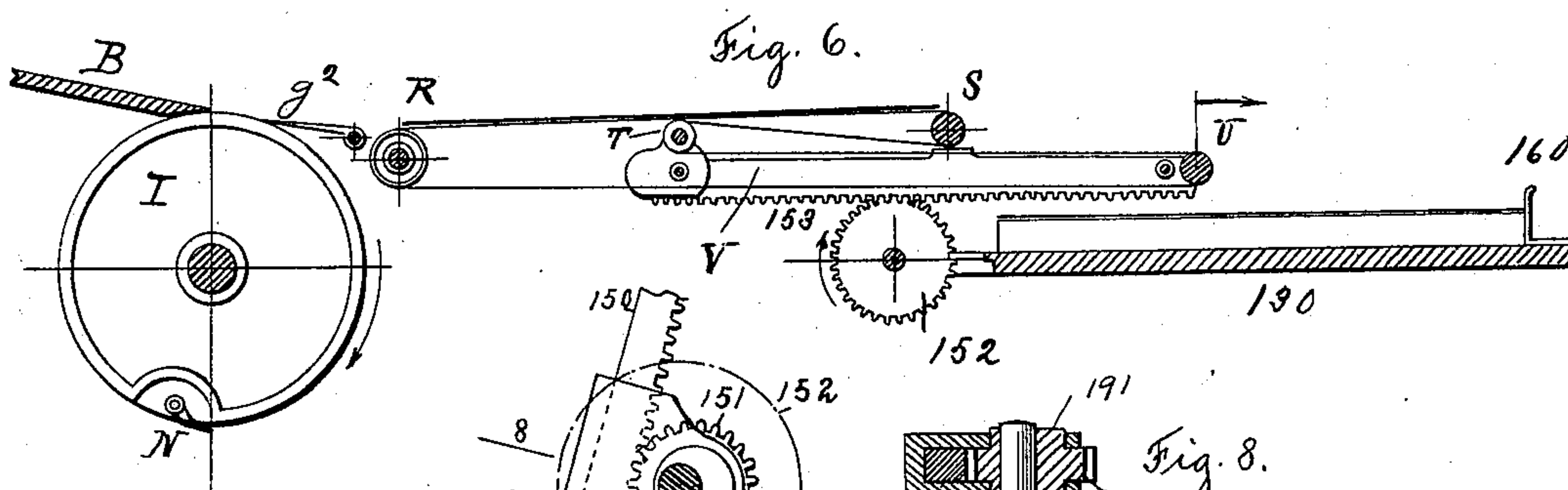
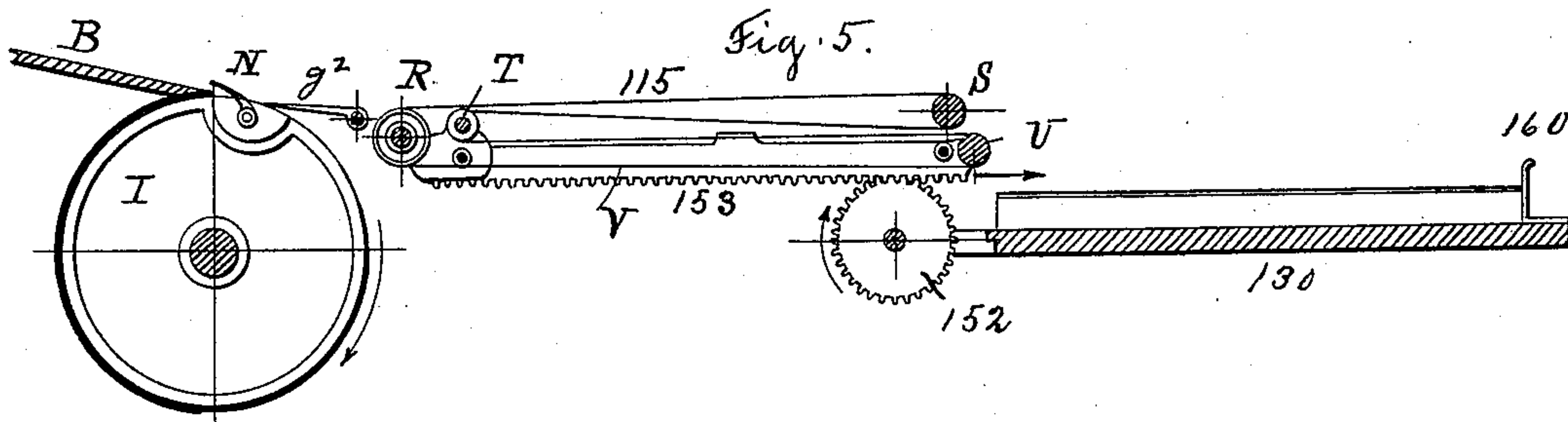
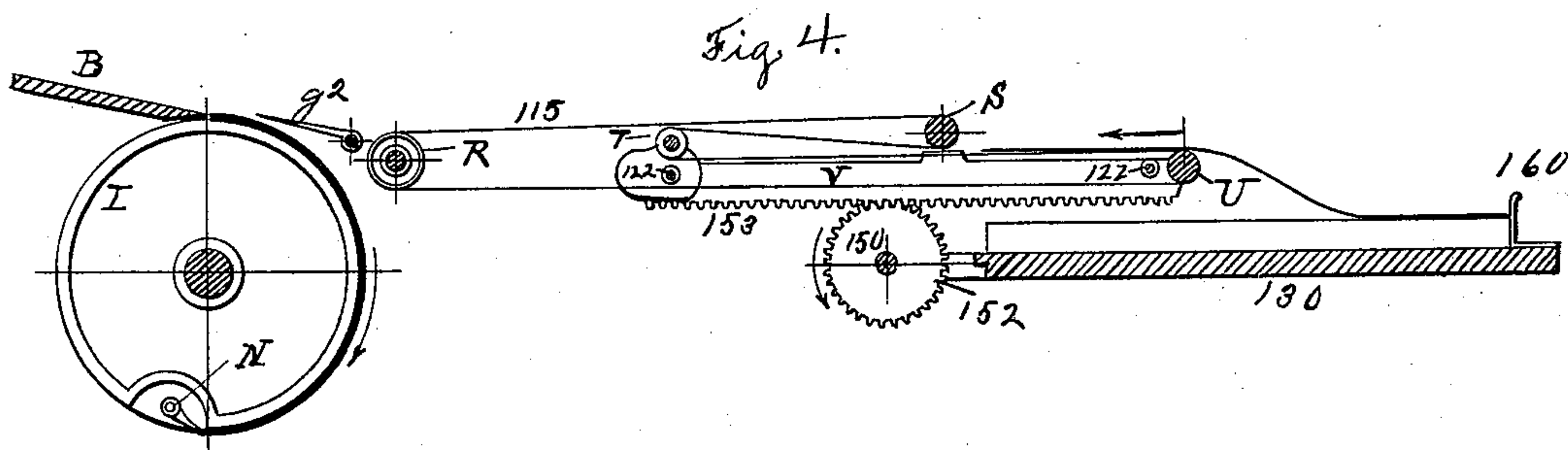
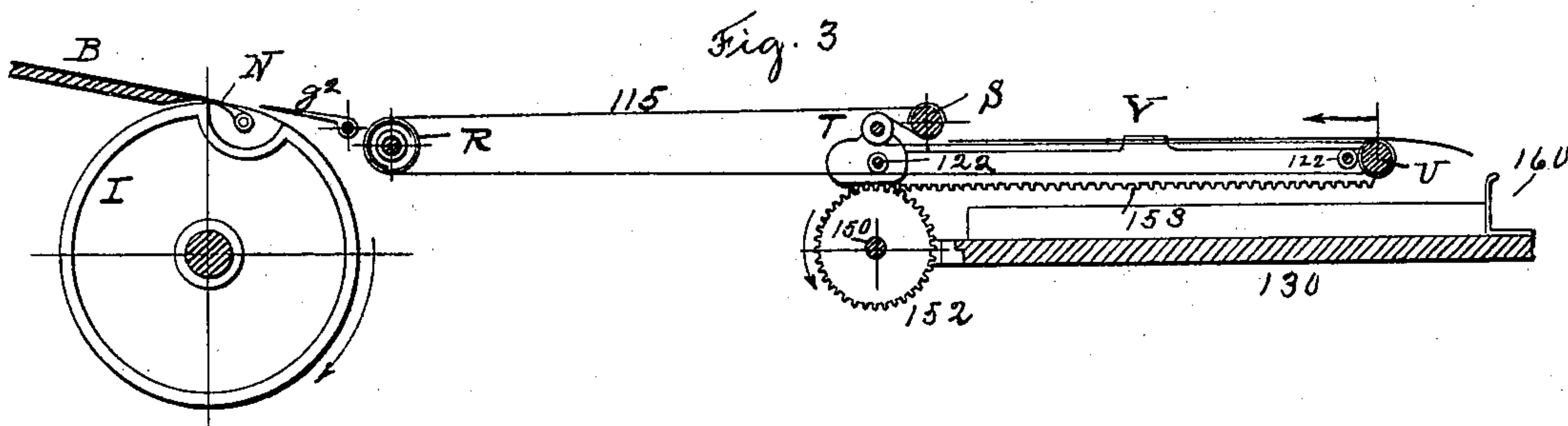
Inventor
H. A. Wise Wood,

By his Attorney
Louis W. Southgate

2 Sheets—Sheet 2.

No. 594,054.

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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO THE CAMPBELL PRINTING PRESS AND MANUFACTURING COMPANY, OF NEW YORK.

DELIVERY MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 594,054, dated November 23, 1897.

Application filed May 28, 1892. Serial No. 434,805. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Delivery Mechanism for Cylinder Printing-Presses, of which the following is a specification.

The aim of this invention is to produce a new and improved delivery mechanism for cylinder printing-presses, and one which shall deliver the printed sheets printed side uppermost, always in full sight, without contact of the printed surface with any part and without the use of grippers.

To this end the invention consists of the device described and claimed in this specification and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of enough of a printing-press to illustrate my invention. Fig. 2 is a plan of the same. Figs. 3 to 6, inclusive, are diagrammatical views illustrating the different positions of the delivery mechanism while manipulating a sheet; and Figs. 7 and 8 are detailed views of part of the tape-carriage-driving mechanism.

Referring to the drawings and in detail, A represents the usual framing of the machine, on which is mounted in the usual manner the feed-board B, and also journaled in the usual bearings is the impression-cylinder I. The impression-cylinder I is driven by means of the usual driving-gear 140 from the driving-shaft 143 by means of gear 141.

P represents the usual reciprocating bed, and the arrangement and operation of these instrumentalities are the usual ones, not necessary to describe here at length. A small shaft g' is arranged, as shown, in suitable brackets, and this shaft has suitable stripper-fingers g^2 , which are adapted to strip the sheet from the impression-cylinder after the same has been printed. This shaft g' is oscillated by means of cam F, which is driven by means of gear E, connected to the same, and this gear E is driven from the small gear D, mounted on the impression-cylinder shaft. On the shaft g' is an arm G, which has a roller g , which bears on the cam F.

The reduction between the gears D and E is one to two, so that by noticing the shape of the cam F it will be seen that the stripper-fingers g^2 are lowered to take the sheet from the impression-cylinder at every other revolution of the same, the particular printing-press shown being of the well-known two-revolution type.

After the sheets have been stripped from the impression-cylinder by the stripper-fingers they are guided onto a set of traveling tapes 115. These traveling tapes pass around suitable tape pulleys or rollers R, S, T, and U, as shown, and the tapes are driven in the direction indicated by the arrow in Fig. 1 from gear C, fastened to the impression-cylinder I by means of intermediate H and gear J, fastened on the shaft 114, which is the shaft of the tape-roller R, and this gearing is so proportioned and designed that the tapes will travel at the same speed as the peripheral speed of the impression-cylinder.

The tape-roller R preferably consists of a number of tape-pulleys, as shown, and the tape-roller T also preferably consists of a number of tape-pulleys, as shown, mounted on the shaft 120, so as to keep the tapes in proper lateral position, and the tape-rollers S and U are simply straight rollers mounted on shafts 116 and 121, as shown. The shafts 120 and 121, which carry the tape-rollers T and U, are mounted in a suitable reciprocating carriage V, and this reciprocating carriage V consists of the side arms 112, which are tied together by suitable tie-rods 122, as shown.

Mounted on the framing are the brackets 110, and between these brackets 110 and the brackets that carry the shaft 114 are arranged the guiding-rods 111, which may consist of round shafts, as shown, and the side arms 112 of the carriage V have bearings 113, engaging these shafts 111, so that the carriage V may easily reciprocate back and forth.

A bracket 131 is mounted in the usual manner at the end of the press to carry the ink-fountain, (not shown in this case,) and between the brackets 110 and 131 is arranged the delivery-table 130. Also arranged in the framing are the usual inking and distributing rollers 135, 136, and 137, which are adapted

to convey ink from the fountain to the distributing-table and then on to the form on the bed in the usual manner.

The tape-carriage is reciprocated once for each complete excursion of the bed, and the mechanism hereinafter described for reciprocating the same is so proportioned that the carriage will move at about one-half the speed at which the tapes 115 are traveling or one-half the peripheral speed of the impression-cylinder.

The particular mechanism for reciprocating the tape-carriage consists of a shaft 146, which is driven from shaft 143 by means of pinion 142, intermediate 144, and gear 145, fastened on the shaft 146. Secured on one end of the shaft 146 is a crank-arm 147, which is connected by link 148 to the reciprocating yoke 149, which yoke embraces the shaft 146, as shown, whereby as the crank 147 turns the yoke will be reciprocated up and down. On the end of the yoke 149 is formed a rack 150, which engages a small pinion 151, secured upon a shaft 150, mounted in the brackets 110, and on this shaft 150 are mounted gears 152, which engage racks 153, formed or attached to the under side of the side arms 112 of the reciprocating carriage V. The pinion 151 is mounted eccentrically on the shaft 150, as shown, and on the side of this pinion are formed bosses 191 and 192, and engaging these bosses is the hood 190, through which the rack 150 passes, whereby the rack will always be kept in proper mesh with the pinion, although the same is eccentrically mounted on the shaft 150. The object in mounting this gear eccentrically is to compensate in great measure the varying movement imparted by the crank, and the parts are preferably so arranged that the tape-carriage will be given about a uniformly-reciprocating movement while the sheet is being dropped from the same, as hereinafter described, and so that the tapes will slightly accelerate the sheet just before the same is delivered and just at the completion of the delivery, and whereby the sheet will be nicely dropped.

Suitable guide-fingers M are arranged over the roller S to guide the sheet from the upper part of the tapes down over the roller S to the second part of the tapes, and similar guide-fingers Q are arranged over the roller U, as shown, and also on the end of the table 130 are arranged suitable stops 160, against which the sheets come as they are finally delivered.

It will be seen that the roller T is always between the roller S and the impression-cylinder and that as the carriage reciprocates back and forth the tapes 115 will be always kept taut, because as much tape as is taken up by one roller T or U is let out by the other.

It will thus be seen that my delivery mechanism consists of a set of driven tapes onto which the sheet passes, and that this set of tapes runs around two stationary rollers, as R and S, and two reciprocating looping-rollers, as T and U, and that these rollers are so

arranged that the top part of the tapes runs from the first stationary roller to the second stationary roller and from the second stationary roller around the looping-rollers, and that the under part of the tapes runs from the last looping-roller back to the first stationary roller. By this means the loop of the tapes will lie under the last stationary roller S, and the loop in the tapes will reciprocate under the last stationary roller. By this arrangement the sheet will first pass onto the portion of the tapes between the two stationary rollers R and S, and will then run down over the stationary roller S onto the upper portion of the tapes carried by the looping-rollers, and, further, it will be seen that the sheet will pass nicely onto the tapes, as that portion of the tapes between the rollers R and S is kept quiet and free from the vibration of the moving carriage which carries the reciprocating looping-rollers.

The operation of my device will now be described, and reference, to understand the same, should be had to the diagrammatical figures.

In Fig. 3 the impression-cylinder is shown as just taking a sheet from the feed-board B, the grippers N just closing upon the same. In this position of the parts the tape-carriage is substantially the farthest off from the impression-cylinder, as shown, and a sheet that has just been printed is on that portion of the tapes between the rollers T and U. Now during the next half-revolution of the impression-cylinder the sheet first fed will be carried around to just engage the bed, and the carriage V will be moved half-way to the left, or to the position shown in Fig. 4, and the sheet on the tapes partially delivered, as shown. Now during the next half-revolution of the impression-cylinder I the sheet will be printed and the head of the same will be carried up to the position shown in Fig. 5, and at this point the grippers N will open and the stripper-fingers g^2 will drop to take the sheet from the cylinder, and also during this half-revolution of the cylinder the tape-carriage V will finish its movement to the left and entirely deliver the leading sheet, as indicated in said Fig. 5. Now during the next half-revolution of the impression-cylinder the sheet just taken from the impression-cylinder will be carried by the tapes onto that portion of the same between the rollers R and S, or until the parts assume the position shown in Fig. 6, and now during the last half-revolution of the impression-cylinder to complete the cycle the tape-carriage will be moved back to the position shown in Fig. 3 and the sheet will run over roller S and will pass onto that portion of the tapes between the rollers T and U or to the position shown in Fig. 3. The stripper-fingers g^2 thus operate to properly direct the sheets from the impression-cylinder onto the tapes. It will be seen as the sheet passes from the portion of the tapes between the rollers S and

R onto that portion of the tapes between the rollers T and U and the tape-carriage moves to the right that the motion of the tapes between rollers T and U is about the same as
 5 that between the rollers R and S, whereby the sheet will easily turn down over roller S onto the tapes. Now when the sheet is entirely on that portion of the tapes between the rollers T and U the carriage starts on its
 10 movement to the left. This movement, as before described, is substantially one-half the speed of that at which the tapes are moving. Hence as the tapes are looped around the roller T the top portion of the tapes between
 15 the rollers T and U will remain stationary, because all the incoming tape or tape coming over roller S will be retarded or taken up by roller T, and hence the sheet being delivered will remain substantially stationary, the top
 20 portion of the tapes under the same also remaining stationary and simply peeling or stripping away from under the forward end of the sheet. This action will take place by reason of the fact that the carriage will sub-
 25 stantially reciprocate at a uniform speed, the tapes as the sheet is passed onto the delivery-table only giving to the sheet a slight throw before commencing this delivery action and just at the completion of the same, as before
 30 described. This constitutes a very accurate and nice delivery mechanism, because the sheet comes to a gradual standstill and is allowed to drop on the table by simply drawing the tapes from under the sheet, the top por-
 35 tion of the part of the tapes supporting the sheet during this operation, by reason of the loop before described, substantially standing stationary under the sheet. The parts are so
 40 timed that while the carriage is on its backward travel the speed of the same is such as to substantially compensate for the forward movement of the tapes, so that the portion of the tapes extending from roller T to roller U
 45 will remain substantially stationary and the delivery action will be accomplished by withdrawing the tapes from under the sheet while the same is substantially stationary. This is a new and greatly-improved mechanism over any with which I am familiar.

50 Thus it will be seen that I have invented a device by which the sheet is taken from the impression-cylinder without the use of grippers, in full sight of the pressman, with the printed side up and without contact of the
 55 printed side with any of the parts.

The device herein shown and described may be greatly varied by a skilled mechanic without departing from the scope of my invention as expressed in the claims.

60 Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a sheet-delivery mechanism, the combination of a set of driven tapes, two station-
 65 ary tape-pulleys mounted in the frame, two looping tape-pulleys, the tapes running for-

ward from the first stationary pulley to the second stationary pulley, then backward around the first looping-pulley, then forward to the second looping-pulley, and then back-
 70 ward to the first stationary pulley, whereby two portions of the tapes are uppermost for controlling the sheet, the speed of which second section will be controlled by the move-
 75 ment of the looping-rollers, and means for moving the looping-rollers so that the sheet while being delivered will remain substantially stationary, and the tapes will be with-
 80 drawn from under the same, substantially as described.

2. A sheet-delivery mechanism consisting of a set of driven tapes onto which the sheet passes, two stationary rollers, two looping-rollers around which the tapes run, the top
 85 portion of the tapes running from the first stationary roller to the second stationary roller, and from the second stationary roller around the looping-rollers, and the under part of the tapes running from the last looping-
 90 roller back to the first stationary roller, and means for reciprocating the looping-rollers at substantially one-half the speed of the tapes, substantially as described.

3. A sheet-delivery mechanism comprising a set of driven tapes onto which the sheet
 95 passes, stationary rollers, two looping-rollers for the tapes arranged so that the loop in the tapes lies under the last stationary roller, and means for reciprocating the looping-rollers at
 100 substantially one-half the speed of the tapes, substantially as described.

4. The combination in a delivery mechanism of the impression-cylinder, the set of traveling tapes, means for driving the same, means
 105 for guiding the sheet from the impression-cylinder onto the tapes, two stationary rollers, a carriage carrying two looping-rollers, the tapes passing around the two stationary rollers and then around the two looping-rollers
 110 and back from the last looping-roller to the first stationary roller, and means for reciprocating said carriage at substantially one-half the speed of the tapes, substantially as described.

5. The combination in a delivery mechanism of the impression-cylinder, the set of traveling tapes, means for driving the same, means
 115 for directing the sheets from the impression-cylinder onto the tapes, the stationary rollers R and S, the carriage V carrying the rollers T and U, means for reciprocating the carriage, the roller T being between the roller S
 120 and the impression-cylinder, the tapes passing around rollers R, S, T and U, and the guiding or directing fingers M placed over the roller S adapted to guide the sheet down onto
 125 the portion of the tapes between the rollers T and U, substantially as described.

6. The combination in a delivery mechanism of the impression-cylinder, the set of traveling tapes, the stationary rollers, and the
 130 tape-carriage carrying the moving rollers

around which said tapes pass, and means for
reciprocating said tape-carriage consisting of
racks mounted on the carriage, gears mesh-
ing into said racks, said gears being mounted
5 on a shaft, a pinion mounted eccentrically on
said shaft, a rack meshing with said pinion,
and a crank for reciprocating said rack, said
eccentric pinion and crank being set so as to
impart substantially a uniformly-reciprocating

movement to said carriage, substantially as
described.

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

H. A. WISE WOOD.

Witnesses:

LOUIS W. SOUTHGATE,
JOHN J. MURRAY.