

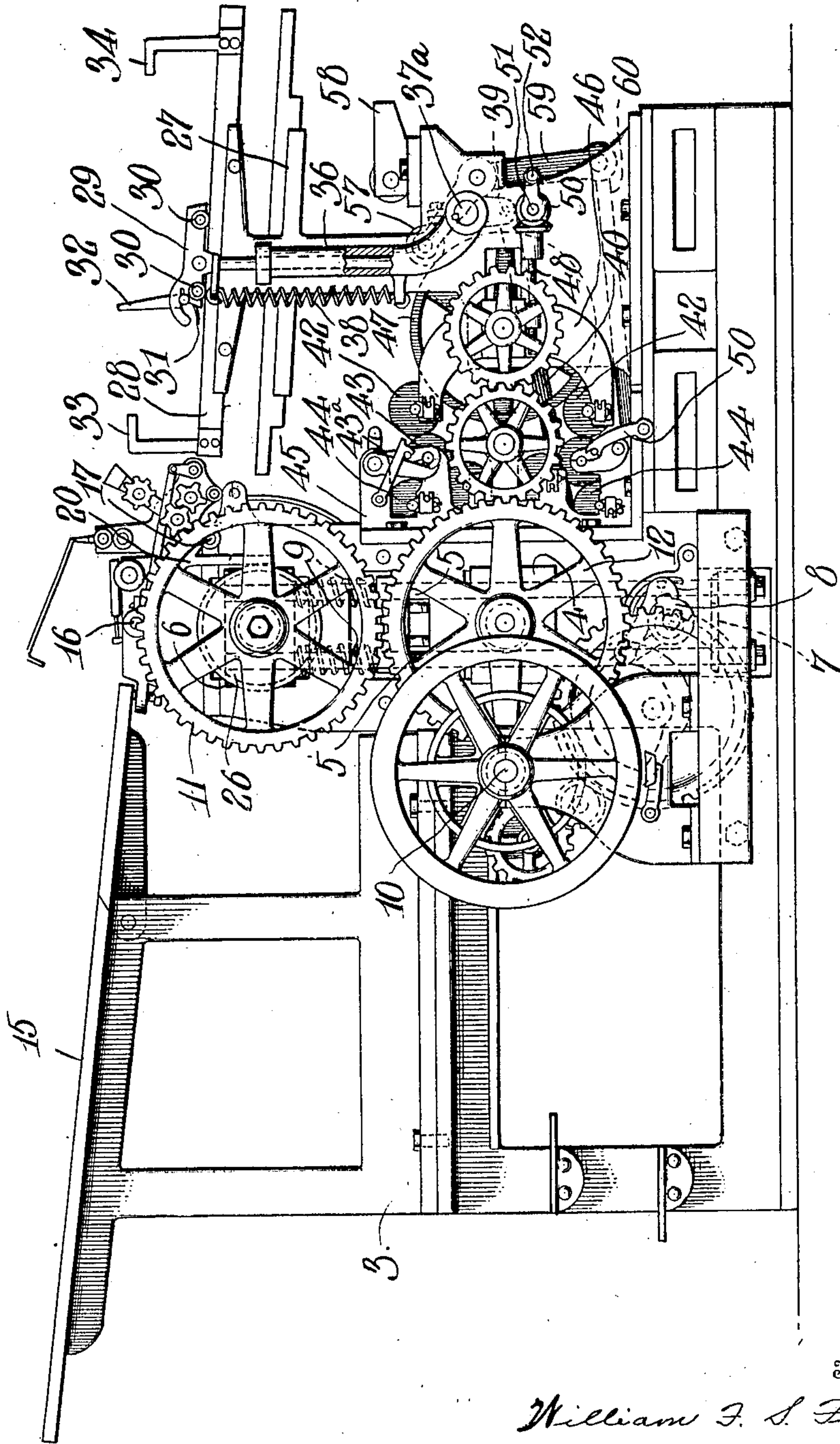
W. F. S. FERRY.
PRINTING PRESS.
APPLICATION FILED JULY 15, 1908.

925,890.

Patented June 22, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

C. E. Smith.
J. F. MacIndoe

Inventor

William F. S. Ferry

By

Mallow Van Booshtick

Attorney

W. F. S. FERRY.

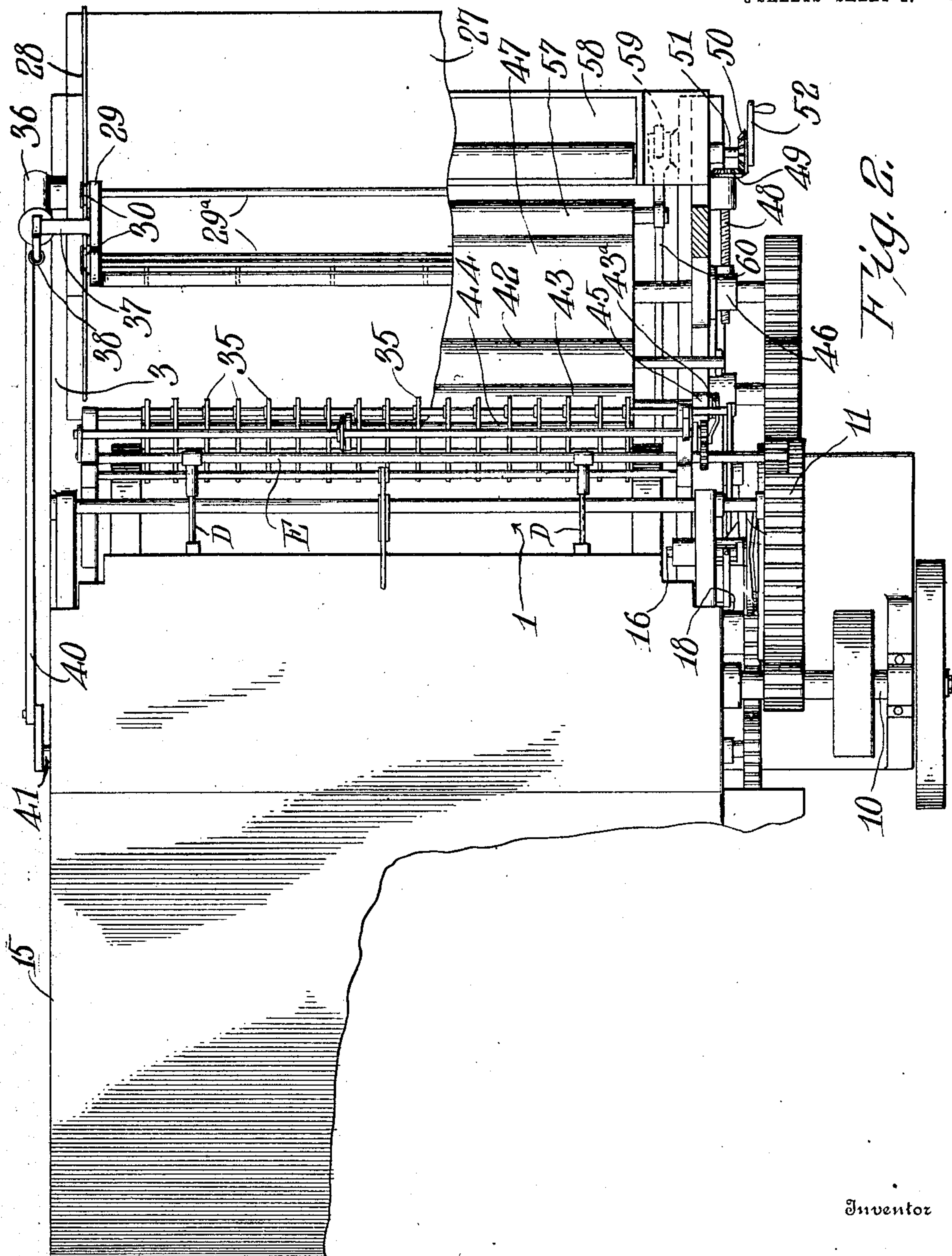
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3 SHEETS—SHEET 2.



Inventor

Witnesses

C. E. Smith.
J. F. Mac Indoe

William F. S. Ferry

By *Marlow Van Booskerck*
Attorney

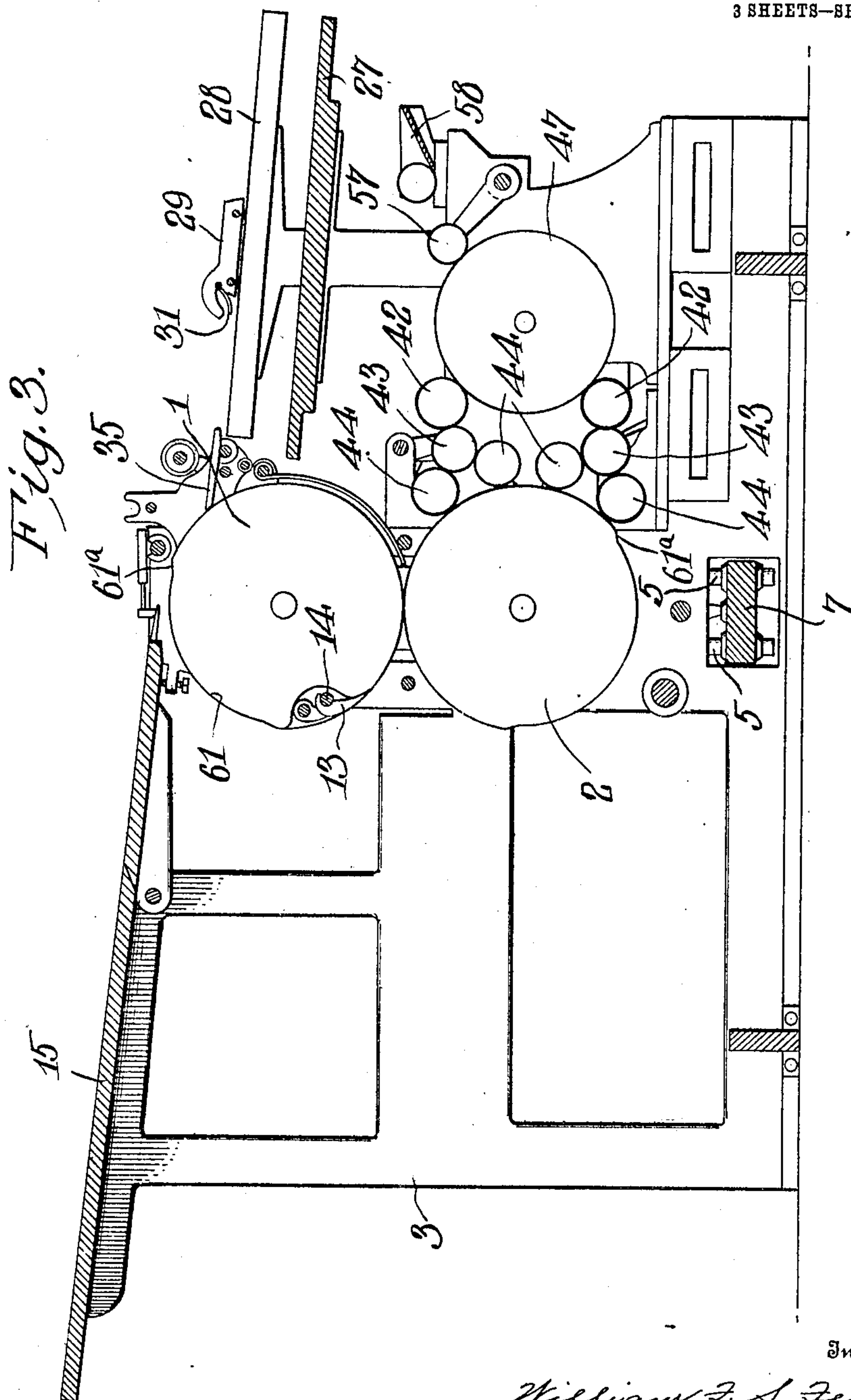
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3 SHEETS—SHEET 3.



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C. E. Smith.
J. H. Mac Indoe

Inventor

William F. S. Ferry

334

Mahlon Van Boos Kirk

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM F. S. FERRY, OF PHILADELPHIA, PENNSYLVANIA.

PRINTING-PRESS.

No. 925,890.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM F. S. FERRY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

This invention embodies novel improvements in printing machines of the rotary type, and relates particularly to the sheet delivery mechanism.

For a full comprehension of the invention, and the advantages thereof reference is to be had to the accompanying detail description, and to the drawings herewith, in which:

Figure 1 is a side elevation of a rotary printing press embodying the essential features of the invention; Fig. 2 is a top plan view, and Fig. 3 is a vertical longitudinal sectional view.

Referring particularly to the drawings and describing the specific construction of the invention the numeral 1 designates the impression cylinder and the numeral 2 the form cylinder, said cylinders being mounted upon shafts in the customary way and journaled in boxes supported by the sides of the frame 3 of the machine. The form cylinder boxes 4 are rigidly supported in the frame 3 and spaced rods 5 extend through each of the boxes 4 being secured at their upper ends to the adjacent impression cylinder box 6. A pair of the rods 5 is employed for each box 6 and said rods are movable vertically through the adjacent box 4 in order that the impression cylinder 1 may be carried from non-acting to operating position with respect to the form cylinder 2. As is customary in this class of presses, the pairs of rods 5 are connected at the lower ends thereof by blocks 7, and the usual eccentric operating device shown at 8 in the drawings, is utilized to depress the blocks 7 in order to lower or depress the impression cylinder during the printing operation. The eccentric motion 8 being of a conventional type is not specifically described. The impression and form cylinders are geared together and operated from a drive shaft 10, and the impression and form cylinder gears are designated 11 and 12 respectively. Lifting springs 9 elevate the cylinder 1 at proper times. It is contemplated that the plates of the form cylinder be secured thereto by catches. For the above purpose the form cylinder will be

formed with slots at an angle of about forty-five degrees to its axis, said slots receiving the catches by which the plates are fastened to the cylinder, said plates being of course curved. The impression cylinder 1 is provided with the usual grippers 13 carried by the gripper rod 14 and adapted to take the sheet from the feed table 15 in the customary way, the opening and closing of the grippers 13, however, being controlled by peculiar operating mechanism for the opening and closing pins which cooperate with the tumbler carried upon an end of the gripper rod 14. The closing pin 16, the opening pin 17, and the safety pin 18 of the gripper mechanism are supported in the gripper pin frame of the press and operate in the usual manner. The pins 16 and 17 are actuated by special means including a lever 20 on the gripper pin frame.

Passing now to the delivery mechanism by which the printed sheets are carried from the impression cylinder to a suitable delivery table 27 located at the delivery end of the machine, it will be observed that spaced rails 28 are arranged above the table 27 and form a track upon which a delivery carriage 29 is adapted to travel back and forth. The carriage 29 comprises sides and rods 29^a connecting the same rigidly together, suitable wheels 30 being applied to the sides of the carriage and adapted to travel along the rails 28. At its inner end the carriage 29 is provided with gripper mechanism including grippers 31 and a trip lever 32 suitably connected with the grippers to open and close the same with respect to the printed sheet. The lever 32 is adapted to be engaged by arms 33 and 34 located at the inner and outer terminals respectively of the rails 28. As the carriage 29 approaches the limit of its movement toward the impression cylinder the lever 32 is engaged by the arm 33 and the grippers 31 are caused to take the printed sheet from the strippers 35. In like manner when the carriage 29 reaches the outer limit of its movement cooperation of the lever 33 with the arm 34 causes the grippers 31 to release the sheet and the latter drops to the table 27. The carriage 29 is operated by peculiar means now to be described. It may be noted here, however, that the manner of delivering the printed sheet to the table 27, by the carriage 29, is especially advantageous since the sheet falls flat thereby eliminating likelihood of offset. By the means above

described the sheet is quietly dropped to the table 27 and no force being exerted in this connection the likelihood of offsetting is practically eliminated, as above mentioned.

Furthermore, the printed sheets being delivered with the printed side up the operator can readily observe how the color is running without pulling out a sheet which is very frequently thrown away. The present delivery mechanism accomplishes a saving of paper and of time in handling.

The carriage 29 is moved back and forth on the rails 28 by means of arms 36 arranged upon opposite sides of the machine and keyed or otherwise secured to a shaft 37^a mounted in the sides of frame 3 of the press. The arms 36 are extensible consisting of telescopic sections and are pivotally connected at their upper ends with trunnions 37 extending outwardly from the outer sides of the carriage 29. As the carriage 29 approaches the terminals of its movement the arms 36 are extended, the extensibility of the arms being necessary to accommodate for the increase and decrease in the distance between the axis of the shaft 37 and the trunnions 37 of the carriage. Springs 38 are connected at their upper ends with the upper sections of the arms 36 and at their lower ends with the lower sections of said arms, and these springs normally tend to hold the upper arm sections at the lower limit of their telescopic movement with respect to the lower arm sections. The sections of the arms 36 are thus positively connected by the springs 38 which latter constitute positive means for holding the carriage 29 down upon the track 28. The arms 36 are oscillated by any suitable operating mechanism and for this purpose it is preferred to employ a crank arm 39 extending from the outer end of the shaft 37, said arm 39 being connected by a rod 40 with a crank shaft 41 operated through the medium of a suitable train of gearing connecting the same with the drive shaft 10.

The inking mechanism shown is somewhat similar to that customarily employed in printing machines, generally speaking. Said mechanism includes the distributing rollers 42, the vibrating rollers 43, and the form rollers 44 all operating in contact with each other during the actual running of the machine. As is well known it is of considerable advantage in printing machines to have the distributing rollers readily accessible, and this is had in view in the construction of the present invention in which the rollers aforesaid are not only accessible, but they are adjustable, removable, and interchangeable. For the above reason the life of the rollers is prolonged and especially with regard to the composition rollers which are subjected to considerable wear. The several rollers 42, 43 and 44 are mounted upon a frame com-

prising sections 45 and 46. The section 46 is carried by that portion of the frame of the machine which supports the delivery mechanism, and said frame section 46 is adjustable toward and from the section 44. Supported in the frame section 46 is the plate roller 47 and hence when the frame section 46 is adjusted or moved the roller 47 is likewise adjusted. To facilitate movement of the frame section 46 it is contemplated to provide at each side of the machine a screw 48 passing through a threaded opening in the frame section 46 and operable by means of a bevel gear 49 meshing with a similar gear 50 carried by a short shaft 51, the latter being adapted to be turned by a crank handle 52. By turning the handle 52 the frame section 46 may be moved so as to carry the distributing rollers 42 toward or from the vibrating rollers 43. When the rollers 42 and 43 are separated it will be apparent that any of the rollers of the inking mechanism, that is to say, any of the seven rollers by which ink is taken from the plate roller 47 to the form cylinder 2, may be adjusted, removed, or interchanged with respect to other rollers. The advantages of the above are evident. The rollers 43 are supported by links 43^a formed with suitable bearings for the journals of the rollers, and of sectional construction to permit ready detachment therefrom.

The guide ways 53 in which the frame section 46 has adjustable bearing are preferably rectangular openings or slots in the opposite sides of the frame of the machine, as shown. The roller 57 is arranged for movement between the ink fountain 58 and plate roller 47 and is operated by an arm 59 connected by a rod 60 with suitable operating means.

Certain detail parts of the machine, which are customarily employed in printing presses, and operate in connection with the specific mechanism above described, are not set forth in detail herein by reason of the fact that they do not form any part of the present invention.

Both the impression and form cylinders are provided in the peripheral portions thereof with recesses or depressions 61 and these depressions extend along about one-third of the circumference of said cylinder, as shown in Fig. 3. The function of the depressions 61 is to prevent knocking of the cylinders during the printing operation. During the rotation of the cylinders 1 and 2, as the cylinder 1 is depressed the recesses 61 are adjacent to one another. During the further revolution of the cylinders the ends of the depressions 61, which incline slightly at 61^a ride into contact with one another just before the plates coöperate with the impression cylinder to print the sheet fed thereto. Hence the inclined ends 61^a of the depres-

sions 61 form cams causing the gradual contact of the operating surfaces of the cylinders 1 and 2, said cylinders being tight together by the time the sheet reaches the plates of the form cylinder. The provision of the depression 61 makes the machine run easier and reduces the pull on the cylinders in a manner readily apparent. The present machine can be run without mechanical injury or jar to the press or building in which it is located, the usual heavy flat bed not being employed and space being consequently economized. The machine may be fed by hand or automatically and can be readily operated at a speed of from 500 to 3500 impressions an hour. The form is rolled twice during each impression and this gives more light to the color in printing and decreases the pull on the press and rollers for the form requires a continual flow of ink which it does not receive on the flat bed cylinder presses. The present machine embodies furthermore many other advantages both with reference to construction and operation but same are not set forth other than generally herein.

Having thus described the invention, what is claimed as new, is:

1. In combination, a printing press comprising an impression cylinder, and sheet delivery mechanism consisting of a track, a carriage adapted to travel along said track, sheet grippers carried by said carriage,

means for effecting gripping and releasing action of said grippers, and operating mechanism for the carriage including a shaft, arms projecting from said shaft and comprising telescopic sections, one of which is connected with the carriage, and springs connecting the sections of the said arms and normally tending to positively hold the carriage on the track.

2. In a printing press delivery mechanism consisting of a track, a carriage mounted to travel thereon, and operating mechanism for moving the carriage back and forth consisting of a shaft, means for actuating said shaft, arms carried by said shaft and arranged upon opposite sides of the machine, said arms consisting of extensible sections mounted for slidable movement relative to one another, the lower sections of the arms being connected with the shaft and the upper sections of said arms being connected with the carriage at opposite sides of the latter, and coiled springs connected at opposite ends to the sections of the arms and normally tending to hold the carriage down on the track.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. S. FERRY.

Witnesses:

MAHLON VAN BOOSKIRK,
CHAS. C. EARECKSON.