

No. 881,223.

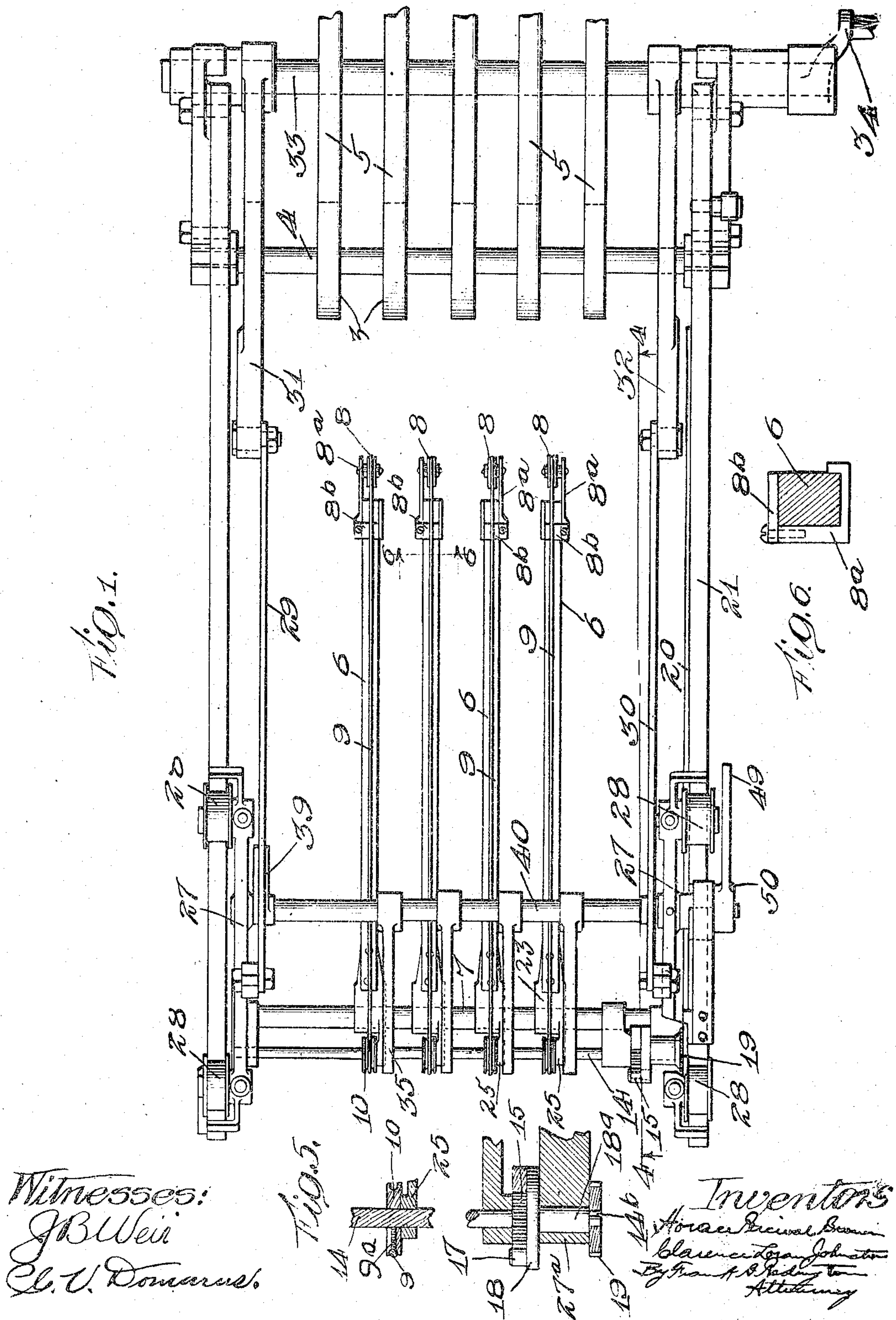
PATENTED MAR. 10, 1908.

H. P. BROWN & C. L. JOHNSTON.

SHEET DELIVERY MECHANISM FOR PRINTING PRESSES.

APPLICATION FILED DEC. 9, 1905.

3 SHEETS--SHEET 1.



No. 881,223.

PATENTED MAR. 10, 1908.

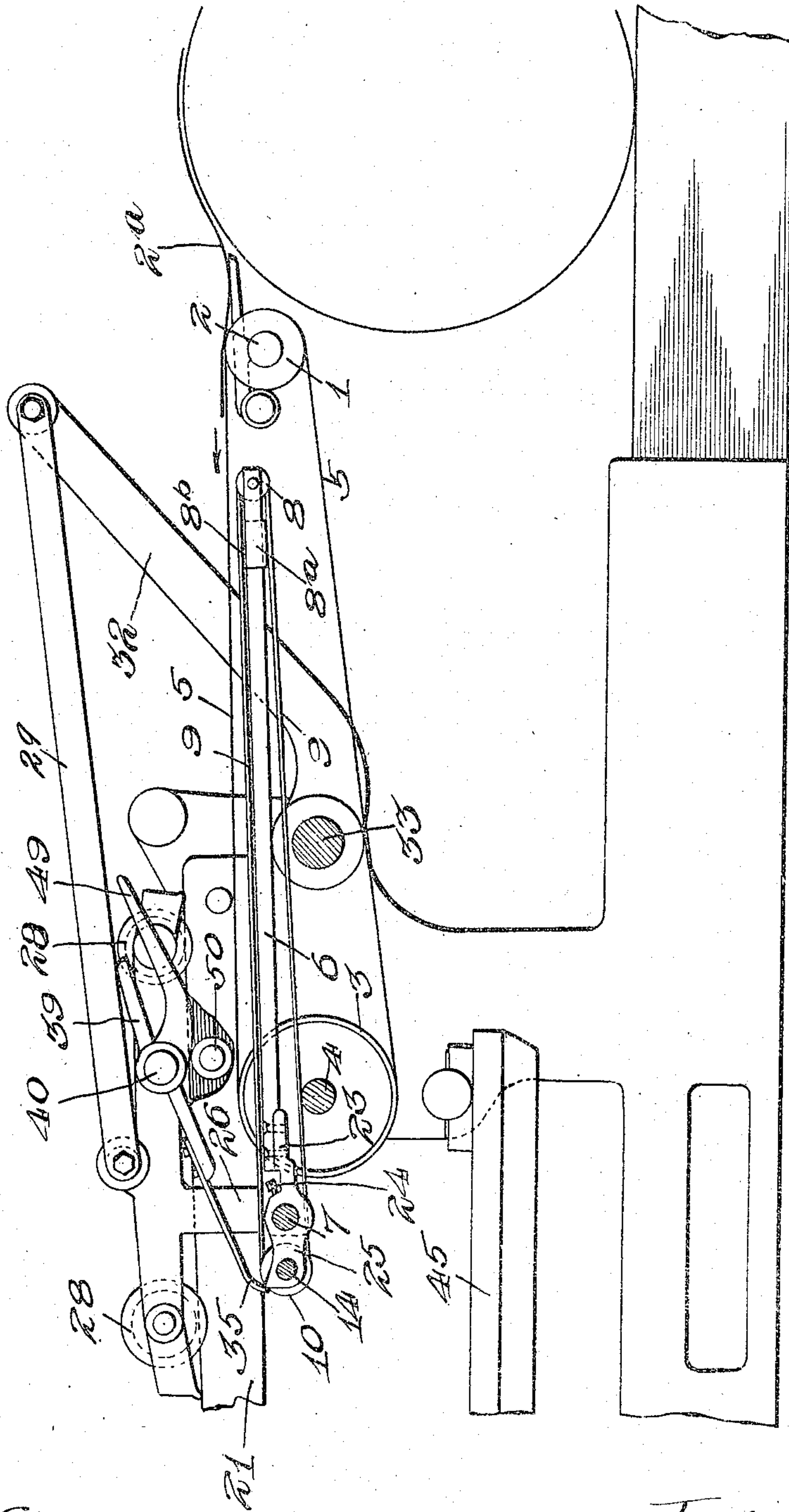
H. P. BROWN & C. L. JOHNSTON.

SHEET DELIVERY MECHANISM FOR PRINTING PRESSES.

APPLICATION FILED DEC. 9, 1905.

3 SHEETS—SHEET 2.

FIG. 2.



Witnesses:
J. B. Weir
C. V. Donnan.

Inventors:
Horace Percival Brown
Clarence Loran Johnston
By Frank A. Redington
Attorney

No. 881,223.

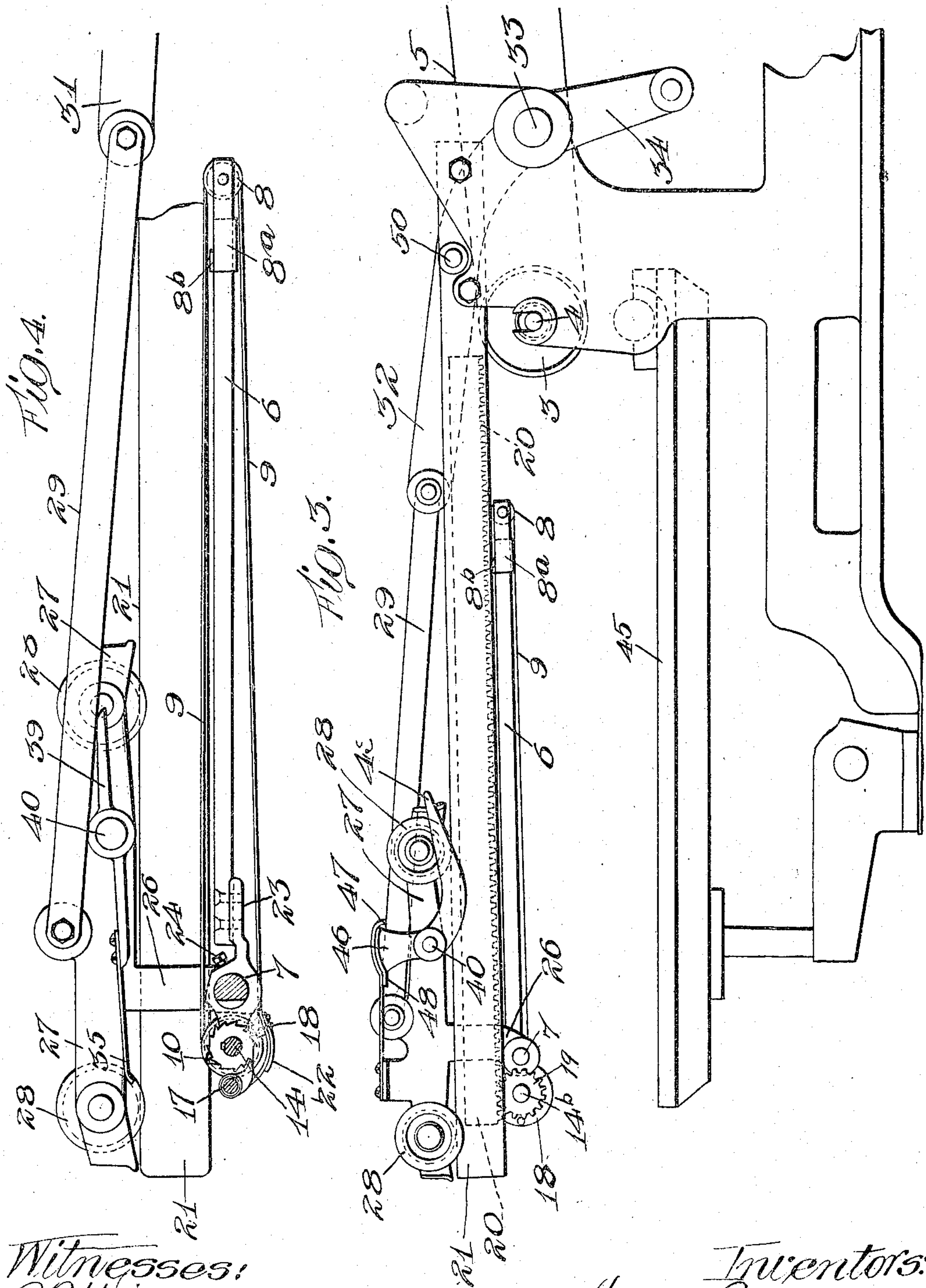
PATENTED MAR 10,

H. P. BROWN & C. L. JOHNSTON.

SHEET DELIVERY MECHANISM FOR PRINTING PRESSES.

APPLICATION FILED DEC. 9, 1905.

3 SHEETS—SHEET 2.



Witnesses:
J. B. Weir.
C. V. Donamus.

Inventors:
Horace Percival Brown
Clarence Leroy Johnston
By Grant & Redington
Attorneys

UNITED STATES PATENT OFFICE.

HORACE PERCIVAL BROWN AND CLARENCE LORAN JOHNSTON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNORS TO FRANK BROWN REDINGTON, OF CHICAGO, ILLINOIS.

SHEET-DELIVERY MECHANISM FOR PRINTING-PRESSES.

No. 881,223.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed December 9, 1905. Serial No. 291,165.

To all whom it may concern:

Be it known that we, HORACE PERCIVAL BROWN and CLARENCE LORAN JOHNSTON, citizens of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Sheet-Delivery Mechanism for Printing-Presses, of which the following is a specification.

10 This invention relates to reciprocating sheet delivery mechanisms, and more particularly to that type in which the sheet is first deposited upon the upper one of two relatively movable sheet conducting or conveying members, which possesses capability of rolling or propelling it off upon the lower one and the latter in turn rolls or propels it off upon the table, or, in other words, rolls out from under it, allowing it to fall upon the table.

20 The primary object of the invention is to provide sheet delivery mechanism of this character whereby the desired close relation between the planes of the sheet delivery members is maintained and their range of movement relatively to each other will be materially increased without increasing the existing dimensions of the machine.

30 With a view to the attainment of these ends, the invention consists in the features of novelty which will now be described with reference to the accompanying drawings, and more particularly pointed out in the claims.

35 In the said drawings—Figure 1 is a plan view of a sheet delivery mechanism embodying this invention; Fig. 2 is a vertical section thereof, partly in side elevation; Fig. 3 is a side elevation thereof with the carriage extended, it being withdrawn in Fig. 2; Fig. 4 is a detail vertical section on the line 4, 4, Fig. 1, on an enlarged scale, showing some of the parts in side elevation; Fig. 5 is a detail sectional view of the cord pulley driving mechanism, and Fig. 6 is a detail section of the holding means of arm 8^a, upon the stick 6.

45 In this exemplification of the invention one of the two aforesaid sheet conducting or conveying members, comprises a series of traveling tapes upon which the sheets are received, and is fixed adjacent to the printing mechanism for receiving the sheet as it is discharged therefrom, while the other com-

prises a series of tapes or cords and reciprocates back and forth with relation to the first sheet as it leaves the first and to roll out from under the sheet when it returns. The stationary one of these sheet conducting or conveying members may be substantially the same in construction and arrangement as similar parts of sheet delivery mechanisms of this character heretofore employed, and preferably comprises tape rollers 1, mounted upon a suitable shaft 2, at one end of the member, and a corresponding number of tape rollers 3 mounted upon shaft 4 at the other end of such member, 5 being the tapes which pass around the rollers 1, 3, and the upper folds of which are caused to travel towards the left or away from the printing mechanism, so as to conduct or convey the sheet in the proper delivery direction as it is deposited by the printing mechanism or other means, the tapes 5 being driven continuously.

55 The tape pulleys 3 are considerably larger in diameter than the shaft 4, and arranged at a sufficient distance apart to leave room between them for the passage of a number of sheet supporting fingers arranged in a series alternating with the tapes 5, and constituting a part of the second or lower one of the aforesaid sheet conducting or conveying members. These fingers comprise sticks or arms 6, each rigidly mounted at one end upon a transverse rod 7 or other suitable support, while their other ends are free or independent of each other and carry pulleys 8, over which pass sheet conducting or conveying cords 9 preferably made of leather. The opposite end of each one of the fingers 6 is provided with a cord pulley 10, around which the other ends of the cords 9 pass. The cord pulleys 10 are mounted on a cross shaft 14, and secured thereon by a screw 9^a, upon one end of which shaft 14 is keyed or otherwise secured a ratchet wheel 15, with which engages a pawl 17, mounted upon a disk 18, which is free from the shaft 14, but which is rigidly secured to a pinion 19 by a short stud shaft 18^a, journaled in bracket 27^a. Pinion 19 engages with the under side of a stationary rack bar 20. Secured to one of the side rails 21 of the frame, so that as the pinion 19 is moved back and forth with relation to the rack bar 20 it will

be caused to rotate and its rotation in one direction will be imparted to the shaft 14, causing the cords 9 to travel in that direction, by virtue of the ratchet 15 and pawl 17, which latter is held in engagement with the ratchet when the pinion 19 turns in one direction by a spring 22, which allows the pawl to slip over the ratchet when the pinion 19 makes its rotation in the opposite direction.

In order that the cord pulley shaft 14 may be rotated, as described, in one direction, and the series of cords 9 with their supporting sticks 6 may be reciprocated back and forth with relation to the series of tapes 5; any suitable means for supporting and thus moving the movable series of sheet supporting fingers may be employed. In this exemplification of the invention the sticks 6 are secured to socket pieces 23, which are adjustably fixed by set screws 24 to the cross-rods 7, and have lugs 25, which support the shaft 14.

The cross-rod 7 is supported by suitable side arms 26 from two carriages 27, provided with rolls or wheels 28, running on tracks or ways constituted by the side frames 21. These carriages are reciprocated upon their tracks or ways by two links 29, 30 respectively, which are pivotally connected to two arms 31, 32 respectively mounted upon a rocker-shaft 33, and said shaft, being provided with a crank arm 34, whereby it may be connected by any suitable means, not necessary to illustrate, with the operating mechanism of the printing press.

The sheet supporting fingers comprising the sticks 6 and cords 9, are so supported and arranged with relation to the tapes 5 that as the carriages 27 are reciprocated or caused to travel back and forth in the described manner upon their ways 21, the cords 9 will pass back and forth between the tape rollers 3 above their supporting shaft 4, and the upper folds of the tapes 9 will occupy a plane slightly below the plane of the upper folds of the tapes 5. When the two sheet conducting members are in their coincident position indicated in Fig. 2, the sheet 2^a, is discharged from the printing mechanism upon the upper folds of the tapes 5, and is urged or propelled forwardly by said tapes until its forward end strikes against a suitable number of stops or gages 35, which are mounted upon the carriages 27 in any suitable way so as to travel with the reciprocating sheet conducting fingers and thus prevent the sheet from floating or discharging from the latter prematurely as the carriage 27 moves forward over the receiving table 45.

As the carriage makes its return movement, the rotation of the pinion 19 induced by its engagement with the rack 20, causes the cords 9 to travel towards the left or in a direction away from the tapes 5, and conse-

quently the sheet is propelled or projected from the tapes 9 with a speed in proportion to their independent travel, and it is allowed to settle upon the table 45 or other sheet receiving surface as the sheet conducting fingers 6, 9 recede from under it. The stops 35 are elevated as shown in Fig. 4 by one of the links 29, 30, the link 29 for example, engaging an arm 39 secured to a rocker-shaft 40, upon which all of the stops 35 are mounted and secured and are held thus elevated during the entire time that the sheet is leaving the cords 9, by any suitable friction or holding means, such, for example, as a dog 46, secured to rocker-shaft 40, and arranged to engage the spring 47 secured to one of the carriages 27, and faced with a piece of leather 48, which will hold the stops 35 elevated against the force of gravity. When the carriage 27 reaches the limit of its return movement towards tapes 5, or is about to arrive at such position, the stops 35 are lowered by the engagement of trip 49 which is secured to shaft 40 and arranged in the line of movement of pin 50, secured to one of the side rails 21, in position to be struck by the trip 49, as the carriage moves towards the right, see Fig. 2, throwing the dog 46 towards the left under the spring 47, which then serves to hold the stops 35 in their depressed position.

The arm 8^a, which supports the pulley 8 is held in position upon the stick 6 by the clamp 8^b, and can be moved lengthwise along the stick for adjusting the pulley to take up the slack of the tape or cord.

Although we have referred to printing mechanism in describing the invention, as an example of one of the devices to which the invention is applicable it will nevertheless be understood that it may be used as a sheet delivery mechanism wherever sheet deliveries are required. For the want of a better term we employ the word tape as a generic term for the elements 9, meaning any flexible connection; for obviously the shape of the cross section of these connections is immaterial so far as this invention is concerned in its broadest aspect.

Having thus described our invention what we claim as new therein and desire to secure by Letters Patent, is:

1. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent of each other at their ends, and each comprising means for propelling the sheet relatively to itself, in combination with means for reciprocating said fingers said sheet propelling means operating as the fingers are moving.

2. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent of each other at their ends, and each comprising means for propelling the sheet relatively to itself, in combination with a plural-

ity of sheet supporting devices alternating in arrangement with said fingers, and means for reciprocating said fingers with relation to said devices said sheet propelling means operating as the fingers are moving.

3. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent of each other at their ends, and each comprising means for propelling the sheet relatively to itself, in combination with a plurality of tapes alternating in arrangement with said fingers for supporting the sheet preparatory to its deposit upon said fingers, and means for reciprocating said fingers with relation to said tapes.

4. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent of each other at their ends, and each comprising means for propelling the sheet relatively to itself, in combination with a tape roller shaft, a plurality of tape rollers thereon with spaces between them, tapes passing around said rollers, and means for reciprocating said fingers between said rollers.

5. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent from each other at their ends and each comprising sheet propelling tapes and tape operating means, in combination with means for reciprocating said fingers bodily, and means for depositing the sheet upon said fingers.

6. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent from each other at their ends and each comprising a stick a tape roller mounted at each end of said stick, and a tape passing around said rollers, in combination with means for supporting and reciprocating said fingers as a whole, means for causing said tapes to travel during said reciprocation, and means for depositing said sheet upon said tapes.

7. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent from each other at their ends and each comprising sheet propelling means, a shaft common to all of said sheet propelling means, a rack bar, a pinion engaging said rack bar, means for imparting the rotation of said pinion to said shaft in one direction, and means for reciprocating said fingers and pinion with relation to said rack bar, in combination with means for depositing the sheet upon said fingers.

8. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent from each other at their ends, and each comprising sheet propelling means, a carriage upon which said fingers are supported and by which said fingers are reciprocated, a shaft supported upon said carriage and having operative connection with all of said sheet propelling means, a rack bar fixed with

relation to said carriage, a pinion engaging said rack bar, and a pawl and ratchet operatively connecting said pinion with said shaft for rotating the shaft when the carriage moves in one direction, and means for depositing said sheet upon said fingers.

9. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent of and separated from each other at their ends and each containing means for propelling the sheet relatively to itself, in combination with a plurality of tapes alternating in arrangement with said fingers for supporting the sheet preparatory to its deposit upon said fingers, and means for reciprocating said fingers into and out of mesh with the said tapes.

10. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent of and separated from each other at their ends, and each comprising means for propelling the sheet relatively to itself, in combination with a tape pulley shaft, a plurality of tape pulleys thereon with spaces between them, tapes passing around said pulleys, and means for reciprocating said fingers between said pulleys and into and out of mesh therewith.

11. In a sheet delivery mechanism, a plurality of sheet supporting fingers separated from and independent of each other at their ends, and each comprising sheet-propelling tapes and tape-operating means, in combination with a second set of traveling tapes alternating with the first said tapes, and means for reciprocating said fingers and first said tapes, as a whole, into and out of mesh with the second said tapes the sheet propelling tapes of said fingers being operated as said fingers are moved.

12. In a sheet delivery mechanism, the combination of a set of traveling spaced tapes for receiving and conveying the sheet, a set of fingers separated from and independent of each other at their ends and alternating in arrangement with said tapes, a second set of traveling tapes supported individually by said fingers, and means for reciprocating said fingers and second set of tapes, as a whole, longitudinally into and out of mesh with the first set of tapes.

13. In a sheet delivery mechanism, a plurality of sheet supporting fingers independent of and separated from each other at their ends, sheet propelling tapes mounted on said fingers individually, pulleys by means of which said tapes are caused to travel longitudinally of and with respect to their respective fingers, a second set of traveling tapes for receiving and conveying the sheet to the first set of tapes, means for reciprocating said fingers and first set of tapes into and out of mesh with the second said set of tapes, and means for rotating all of said tape pulleys in unison in one direction as the first

said set of tapes moves towards the second
said set of tapes, and means whereby said
first set of tapes will remain stationary with
relation to their respective fingers as the fin-
5 gers move away from the second said set of
tapes.

In testimony whereof we have signed our
names to this specification, in the presence of

two subscribing witnesses, on this 25th day
of November A. D. 1905.

HORACE PERCIVAL BROWN.
CLARENCE LORAN JOHNSTON.

Witnesses:

CLEMENT BENNETT,
C. P. KENNEDY.