

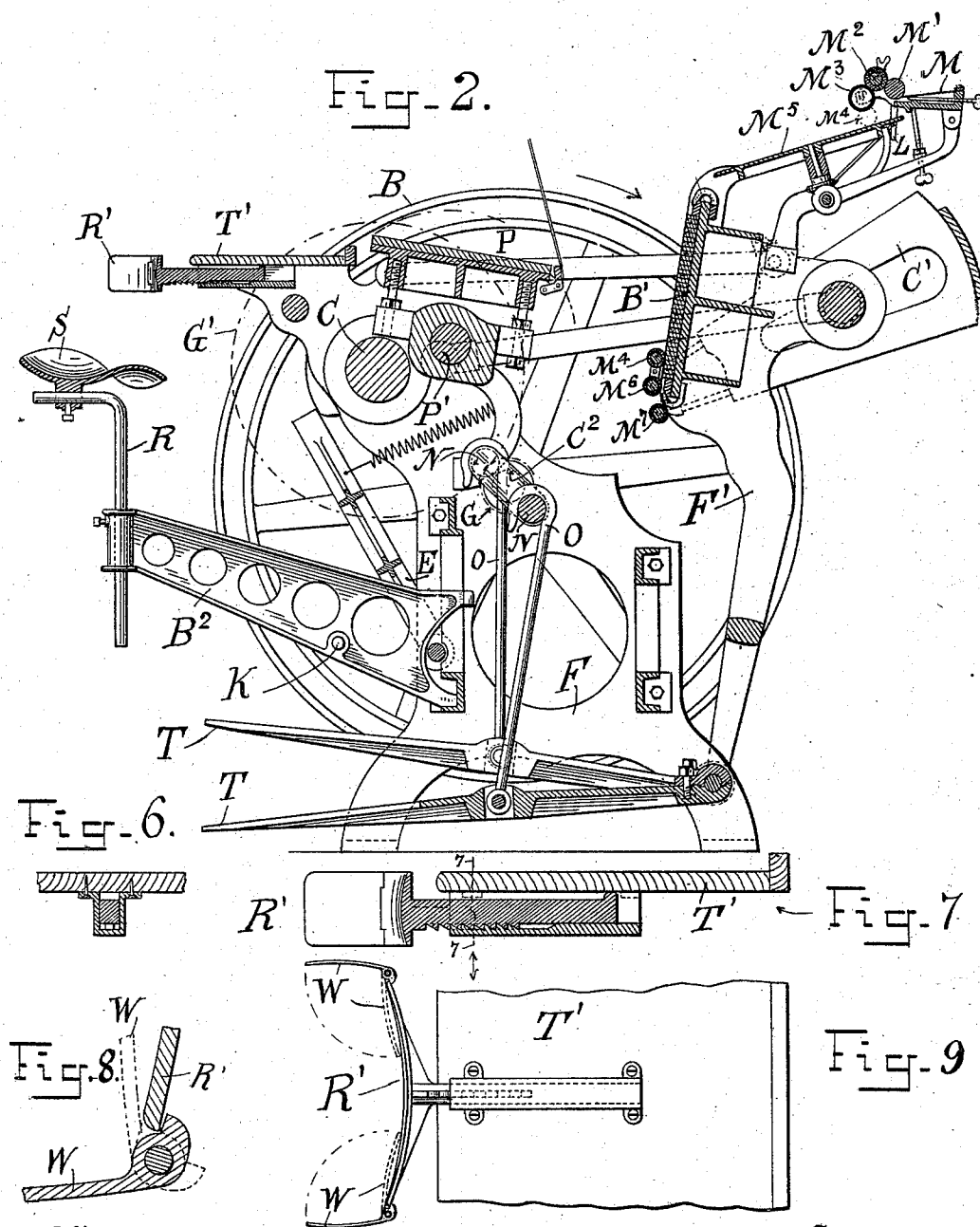
(No Model.)

2 Sheets—Sheet 2.

H. JOHNSON.
JOB PRINTING PRESS.

No. 573,413.

Patented Dec. 15, 1896.



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UNITED STATES PATENT OFFICE.

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JOB-PRINTING PRESS.

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To all whom it may concern:

Be it known that I, HENRY JOHNSON, a citizen of the United States, residing in the city, county, and State of New York, have invented a new and useful Improvement in Job-Printing Presses, of which the following is a specification.

My invention relates to improvements in job-printing presses in which both the bed and the platen are movable and, with the other parts of the printing-press, have heretofore been constructed to be operated by a single treadle and foot used to "kick" the press—that is, to operate it by one foot resting upon a single treadle connected with a motor-shaft provided with one crank—and which also have, for ink-distributing purposes, been constructed with an annular plate and a circular plate located within the annular plate, the annular and the circular plates being given opposite motions for the purpose of distributing the ink taken from the duct-roller by one or more of the form-rollers, and first distributed upon the annular and circular plates combined and then distributed therefrom or applied upon the form, held in a movable bed, at the time when the movable bed is in motion, the platen of the press being also movable and being given such motion that its face will be turned up nearly flat or horizontal to receive and register the sheets to be printed.

My invention is an improved double-treadle, alternating and bipedal, or ambipedal, job-printing press; and the objects of my improvements are to provide means for the better, easier, and more rapid operating of the press by means of a double treadle, or pair of treadles, one for each foot and leg, double treadle-hooks and double cranks on the crank-shaft, improved ink feed and distribution from an ink-fountain through a duct, two distributing-rollers, a cylinder, a carriage-roller, a revolving plate and form-rollers upon a form in a movable bed, an adjustable seat and seat-support for the double-treadle and ambipedal operator or press-feeder, preferably connected with the press, and a movable or adjustable feed-board or rest against which the operator may lean in order the better to steady himself for the purposes of operating and controlling the two treadles alternately, one by each foot,

and also for the purpose of more rapidly and accurately feeding and registering the sheets upon the platen and delivering the same. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figures 1 and 2 are part side and part sectional views of the entire press. Fig. 3 is a top view of the treadles, seat, double-crank shaft, and balance or pulley wheel. Fig. 4 is a detail front view of the seat, seat-supports, and the adjacent parts of the press-frame. Fig. 5 is a top view of a slide table-rest, and Figs. 6, 7, 8, and 9 are detail views of the adjustable table or slide-rest arrangements.

Similar letters refer to similar parts throughout the several views.

The press to, in, and on which my invention is shown as applied is the well-known Gordon press, so far as its general plan is concerned; but this invention may be applied to other job-printing presses as well. So far as known to me, the Gordon, as well as all other job-printing presses, have been operated or arranged to be operated only, and always with difficulty and by excessive effort, by a single treadle moved by one foot and leg of the operator and feeder at a time, or alternately at will, who stands on the other foot and leg, steadying his body, arms, and hands thereby. Such a press could not be operated by an operator seated in any way and is only operated by a feeder standing and steadying himself on one foot at a time and from time to time, especially in starting, compelled to use one hand, applied to the balance-wheel, to move the treadle into position where the foot will move and operate the treadle and the press. This universal method of operating a job-press has become known as "kicking," and is exceedingly laborious and wearing to the feeder and operator, besides being comparatively slow because of the extreme and ever-repeated exertion and impulse required to carry over the two dead-centers and of the alternating strains upon opposite sides of the body as the feeder alternates from one foot and leg to the other to obtain relief and continue or complete his job and to use one hand on the balance-wheel in starting, stopping, and controlling the press. Such hard work and so objectionable is kicking job-

presses in this way that "feeders" cannot be long retained, or only so long as no easier job can be obtained. They constantly seek to obtain work on power-presses because of the severity of the work of job-press kicking as such presses are now built—i. e., with only one treadle.

My invention being operated by both feet, used alternately upon two different pedals, gives the operator or feeder more perfect control over the press and all its functions and also rest and relief from excessive strains of all kinds, along with higher and more steady speed and ability to do more and better work with less expenditure of energy and less fatigue.

My invention applies the bicycle and bipedal or alternating ambipedal principle and method of operation to job-printing presses and offers so much relief to the operator and feeder as to give the hitherto most objectionable job in a printing-office, known as "kicking," an entirely new character and a distinctly favorable standing there and among printers generally.

F is the frame of the press.

B is the balance-wheel.

P is the movable platen, moving on the shaft or journal P'. At the moment of feeding the platen - surface lies nearly flat, as shown in full lines, Fig. 2, and dotted lines, Fig. 1.

C is the cam-shaft from and by which the platen P, the bed B', and its frame F', as well as the roller-carriage C' and brace E, are operated.

C² is the driving-shaft of the press, provided with double cranks N N.

B² is the seat-bracket, which at its lower end, as shown, is made in the form of the letter T, and is removably but centrally engageable with and supported by a central part of the frame F at a central opening therein, as shown in Figs. 1, 2, and 4. At its upper and outer end the seat-bracket has a socket for an adjustable rod R, carrying an adjustable seat S.

T T are the two treadles, connected to the pair of cranks N N by the pair of treadle-hooks O O.

The seat-bracket B² should be located in the center of the cross-frame of the frame F, or between the treadles, in order to hold the feeder or operator in proper relations to the treadles T T to enable him to run the press properly and easily by bipedal or alternating ambipedal action. At the proper time for feeding and registering, the platen, having been turned toward and within easy reach of the feeder and lying nearly flat, is all the more within the perfect control of the seated feeder, while he is also in perfect control of the two treadles, with which his feet are in contact, either for running or for stopping the press, each of which treadles on its return motion helps to lift the foot and leg by the momentum of the balance-wheel, aided by the downward motion of the other foot and

leg, and thereby prevents the fatigue and strain caused by the necessity of lifting the leg on the return motion and of giving impulse enough by one foot and leg on the down motion to carry the single crank over its two dead-centers, as practiced in the old single-treadle presses.

In my invention there are practically no dead-centers, since the cranks are set forward, as shown in Figs. 1 and 2, and pressure upon one or the other of the treadles will move the crank-shaft in any usual position for stopping the press. In starting and operating the press there is no necessity of employing the hand to turn the balance-wheel, as in all single-treadle printing-presses. Both hands are therefore always free to feed, register, and deliver the paper, because released to that duty by the complete control of the press given to the feet by the ambipedal arrangement of the treadles, assisted by the seat and feed-board fulcrums.

The press may be stopped as well as started by the pressure of one or both feet and without using the hand on the balance-wheel.

The crank or driving shaft C² is provided with a pinion G, which engages the large cog-wheel G', secured on the cam-shaft C.

T' is the feed-board, provided with the adjustable rest R', against which the seated feeder or operator leans in order to steady himself for the purpose of gaining proper control over the treadles and over his hands, so that he may feed, register, and deliver properly.

K is a foot-support for each foot, one on each side, secured in or on the seat-bracket B², upon which either foot may be placed to obtain rest while the press is alternately kicked by the other foot, or both feet may be placed there, leaving the treadles free to run if in motion. Consequently the press may be alternately kicked by either foot, or run by both feet, or be left free, much to the relief of the operator and feeder while he is resting his feet and legs.

The feed-board and adjustable slide-rest R' is made adjustable in order to accommodate operators or feeders of different sizes and lengths of arm, and in different positions, and to thereby enable them to steady themselves and with both hands to feed, register, and deliver more rapidly and accurately, while using both legs in operating the press. The seat and the seat-rod are made adjustable for similar purposes, not only in relation to each other, but also in relation to the treadles and to the slide-rest. The seat becomes in fact a new fulcrum from which the press is operated—that is, run, fed, registered to, and delivered—by the feeder, replacing the floor. This seat-fulcrum is not only preferably attached to the frame, so as to become a new, related, and integral part of the press, but as a fulcrum is related to all parts of the press as one of the efficient elements of its operation and different func-

tions. The feed-board and slide-rest become a sort of secondary fulcrum coöperating with the seat to give the feeder entire control of the press and all its functions.

5 In bicycle-riding the seat and the steering-handles furnish two fulcrums or supports from or through which the rider is supported in such a way as to enable him to pedal by the downward action of the two feet used
10 alternately. Here a seat-fulcrum is used, but as feeding and delivering require the use of the hands—both of them—the other or secondary fulcrum or support must be provided in some other way and be used to support
15 some other part of the body, so as to leave the hands free to feed, register, and deliver. I use the feed-board for that purpose, making it adjustable either in itself or by some attachment, against which a front middle
20 portion of the body, or the stomach, is allowed to rest or is pressed, and thereby bringing the body and limbs of the operator and feeder into the required relations to the press and all its parts and functions.

25 The Gordon press and, so far as I know, all other platen-and-bed presses have heretofore been provided only with a single treadle to be kicked by one foot and leg at a time, while the operator or feeder is expected to
30 steady himself upon the other foot for the purpose of feeding and registering the paper on the platen and superintending in general the operations of the press. In order to enable the feeder or operator to use both feet
35 in kicking my alternating ambipedal press, I not only provide the adjustable seat, as already described, but, as the operator has both feet off the floor and can no longer depend on one foot and leg to stand upon and
40 steady himself, I provide the feed-board T' and adjustable rest R' for that purpose.

I am aware that double treadles are old, considered alone and independently, but so far as I know they are new in bed-and-platen
45 printing-presses and have never been used to operate the same. Two ways are shown of making the rest adjustable—one in Figs. 1 and 5 and the other in Figs. 2, 6, 7, 8, and 9. In the former the rest is held by two clamp-screws taking in the under side of the feed-board. In the latter the bar supporting the rest is provided on its under side with teeth to correspond and engage with one or more
50 teeth in the under side of the slide-socket in which it rests. By lifting the rest at the front it can be moved backward and forward and dropped at any point that may be found necessary to accommodate any individual. The rest may also have hinged arms or wings
55 W, to be either opened or closed, as shown in Figs. 8 and 9, against which the operator may lean to steady himself sidewise, or other similar devices may be used for that purpose. The seat is also adjustable for persons of different heights and lengths of arms. The
60 seat and the feed-board may, however, be

made adjustable in any other known or usual way.

The fountain is secured to, carried upon, and moved with the bed-frame F', and therefore is changed as to its levels and angles of relation to the other parts of the press and requires to be adjusted thereto in order to give a proper flow and distribution of ink.

M is the fountain.

70 M' is the duct-roller, which is operated by the ratchet-lever L and transfers the ink from the fountain to the distributing-roller M², from which it is transferred to, upon, and with the cylinder M³, to be taken therefrom
80 and further distributed on the upper carriage-frame roller M⁴, to be thence and thereby distributed upon the distributing disk or plate M⁵ and by the form-rollers M⁶ and M⁷, and by these last upon the form in the movable bed at last. The revolving plate M⁵ is
85 operated in the usual way.

The plate M⁵ is a single plate—that is to say, it is not made up of an annular plate with a disk fitted in the open center of the annular
90 plate, as in the Gordon press. Consequently the whole of the distributing-plate surface revolves in one direction instead of opposite directions, as is the case with the annular and disk portions of the Gordon distributing-
95 plate, and the distribution of the ink is greatly improved thereby.

The bed containing the form is not only movable on, with, and by the bed-frame F', but is in motion during the entire process of
100 taking the ink from the fountain, distributing it upon the cylinder M³, upon the plate M⁵, and also upon the form. The double treadles operate all these moving parts, and the driving force being more steadily applied
105 there is less shake in the action of the press, and consequently a more even distribution of the ink.

Many of the advantages of my ambipedal press may be obtained by the feeder when
110 sitting upon the seat and operating the treadles with his feet in the way and ways described and without using the feed-board or its attachments as a rest, fulcrum, or support; but his seat and his control over the
115 entire press will be less steady and complete than when the secondary fulcrum is also made use of to give additional steadiness and more complete control over the same.

All the movable parts of the press are always under the control of the feet for stopping and starting. The feed-board rest may be held in place, after location and engagement by a wedge or other like device.

I do not desire to limit my invention to the particular feed-board and rest devices shown and described, as it is evident that the elements of a feed-board and a rest may be provided in, on, and in relation to the press in other ways; but I find it convenient to attach the steadying-rest R' as a slide-rest to
120 the under side of the feed-board, as shown
125
130

and described, made adjustable in relation thereto, and therefore of course adjustable in relation to other parts of the press and to the seat. However, the relations of the feed-board and of the rest or bearing for the body of the operator to each other are subordinate to the relations of each to the operator and to the machine. By this means and also by means of the coöperating adjustable seat different people of different dimensions may accommodate themselves to the machine, so as to operate the same with least expenditure of force and with the greatest facility.

Under all circumstances and conditions a seat or support for the operator is necessary to permit the use of both feet upon the alternate ambipedal treadles. The rest is not of equal or equally constant importance, but it assists in giving the operator more and better control of the machine or press on and from the seat as the operator becomes wonted to his work and used to the machine. It also permits a change of method and position in operating the press, and when tired the operator may use it from time to time to rest against and sustain himself to recover from fatigue, as well as to give him steadiness of action and control of the press. Therefore it is possible that for longer or shorter periods an accustomed operator may dispense with the use of the rest, and its relative importance is thereby diminished as compared with the seat. In other words, the rest is not so essential as an element that, like the treadle or treadles, the body of the operator must be constantly pressed against it in order to operate the press.

In the single-pedal job-press only one-half of the working part of the pinion on the crank-shaft is or can be made effective in communicating power to the spur-wheel and through the spur-wheel to the bed and platen in the act of making the impression, or in making what is called the "nip," for which the movements of all the moving parts are preparatory. These limitations are due to the fact that the single pedal is necessarily connected with a single crank on the crank-shaft, through which the power applied by the foot is only effective on the side on which the crank moves downwardly, the upward movement of the crank on the opposite side being non-effective and being due only to momentum. In my invention, however, the other half of the pinion is also made effective in the communication of power to the spur-wheel, and through the spur-wheel in assisting the work and in making the impression more powerful and better, and also, potentially, more frequent. These results are due to the double pedal and double crank operated by each foot alternately and making the pinion effective around its entire circumference. The spur-wheel in turn becomes effective around its entire circumference, and the other parts of the press are also under effective and positive control throughout their movements. Consequently the am-

bipedal feature of my invention nearly, if not quite, doubles the capacities of the press, potentially, when operated by foot-power.

Job-presses are usually, if not always, made strong enough to endure the work they may be called upon to perform when operated by power with a belt and a pulley, through which the pinion and spur-wheel are made continuously effective in communicating power and accumulating momentum throughout the whole of each revolution and throughout the whole of the toothed surfaces of the pinion and spur-wheel and the moving parts of the press. When, however, the single pedal is used, only a part of the capacity of the press is developed or utilized, because only one-half of the working surfaces of the pinion and spur-wheel are or can be made effective in communicating power to the platen and bed and in accumulating momentum from the source of power; but by the use of alternating ambipedal treadles the capacity of the machine may be developed nearly, if not quite, to the extent realized when the press is operated by power communicated by a belt, since there is a continuous action and control of the power applied to operate the machine and a corresponding increase of momentum produced by the two pedals for the final work of making the impression, for which all the other motion is preparatory. It is in this way that my improvement increases the effectiveness of every moving part of the press and of the entire job-press as a piece of mechanism operated by foot-power, and also the quality of the work it is constructed to perform. These improvements, it is to be noted, are accomplished with less strain to the operator than when the single pedal is used, and therefore with greater ease and satisfaction. There is an additional advantage obtained due to the fact that the improvement enables the operator to produce a greater number of better impressions per hour than is possible with the single-pedal press.

Further, where the single treadle is used a heavier balance-wheel is required, and also a counterbalance on one side of the balance-wheel to help pass over one of the dead-centers. The lighter balance-wheel, without counterbalance, that may be used in my press further lightens the load to be carried by pedal-power, and therefore relieves the operator of so much unnecessary work and strain, without diminishing the force and perfection with which the impression is made; or if the balance-wheel is not lightened the nip may be made more powerfully than before; or a larger-sized form may be properly printed without any greater expenditure of muscular energy; or a larger-sized press may be operated by the same expenditure of muscular energy. In either case the machine and its work are improved.

Where the counterbalance is used on the balance-wheel, there is developed an unevenness or one-sidedness of wear-caused by the

hammering blow of the counterweight, and when the counterweight is dispensed with an evenness of wear results, where previously there was unevenness, and in general a solo-pedallic press is necessarily one-sided in action and wear throughout, and will therefore not last as long or do good work as long as an ambipedal press, in which the action and the wear are much more continuous and more evenly distributed throughout the press.

I claim as my invention—

1. In a machine operated by foot-power, a pair of alternating ambipedal treadles connected with a driving-shaft provided with double cranks, in combination with a seat and a steadying-rest, substantially as shown and described.

2. A pair of alternating ambipedal treadles connected with a pair of cranks on a driving-shaft, in combination with a platen and a bed of a printing-press and with a seat for the operator.

3. A job-printing press provided with a pair of alternating ambipedal treadles in combination with a pair of treadle-hooks, a pair of cranks on the driving-shaft of the printing-press, a seat-bracket located centrally in relation to the treadles and the cranks, an adjustable seat, an adjustable slide-rest, and a feed-board, substantially as shown and described.

4. A job-printing press provided with a pair

of alternating ambipedal treadles in combination with a pair of treadle-hooks, a pair of cranks on the driving-shaft of the printing-press, a movable platen and a movable bed, a seat-bracket located centrally in relation to the treadles and the cranks, an adjustable seat, an adjustable slide-rest, and a feed-board, substantially as shown and described.

5. A job-printing press provided with a pair of alternating ambipedal treadles in combination with a driving-shaft provided with double cranks, a removable seat-bracket supporting an adjustable seat, and an adjustable slide-rest, substantially as shown and described.

6. A job-printing press provided with a pair of alternating ambipedal treadles connected with the driving-shaft provided with double cranks, in combination with an adjustable seat and an adjustable slide-rest, substantially as shown and described.

7. A pair of alternating ambipedal treadles connected with a pair of cranks on a driving-shaft, a pinion on the driving-shaft, a spur-wheel, a platen and a bed of a printing-press, with means for operating them, and a seat for the operator.

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