

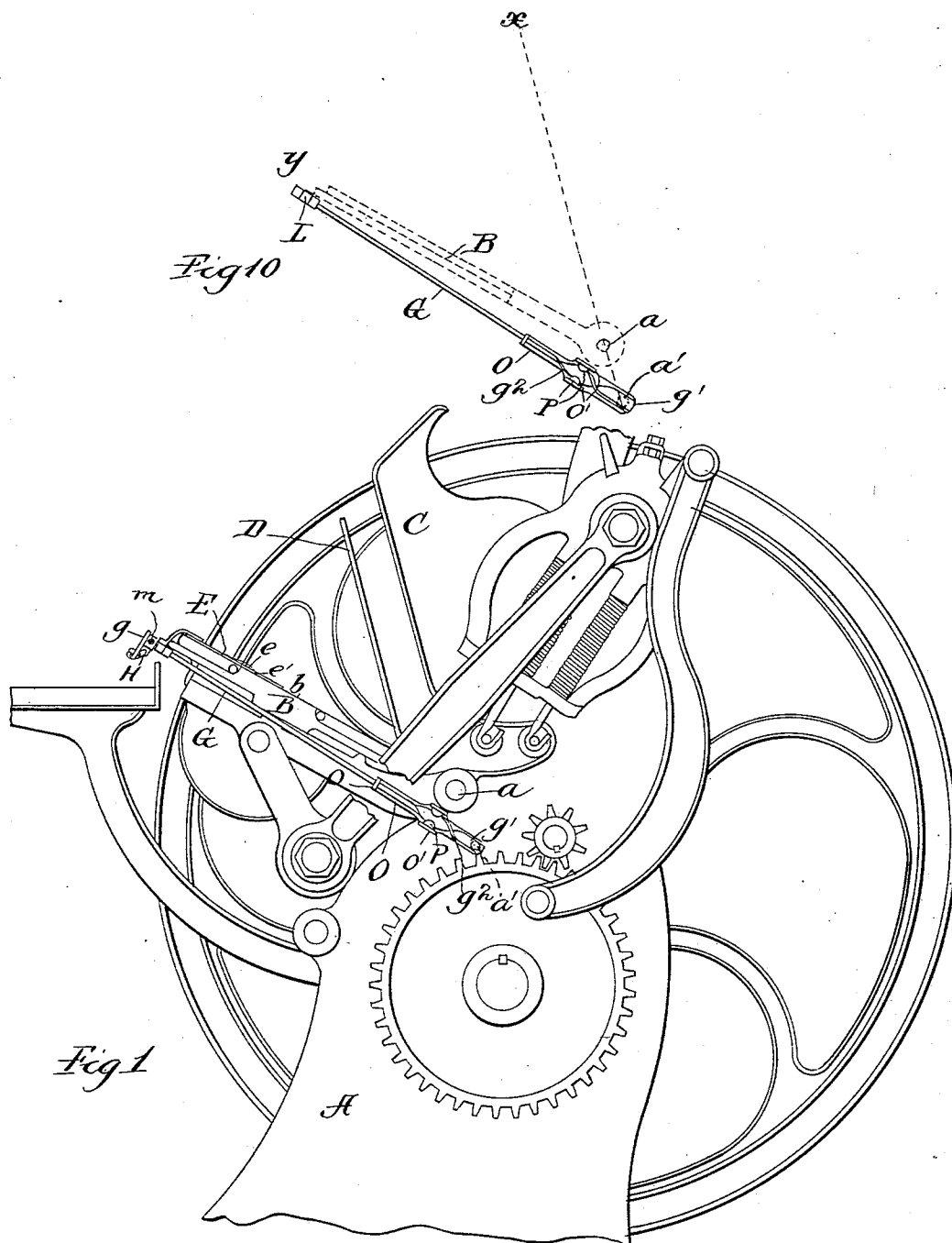
(No Model.)

2 Sheets—Sheet 1.

C. S. RUSSELL.
FEED GAGE FOR PRINTING PRESSES.

No. 580,005.

Patented Apr. 6, 1897.



Witnesses
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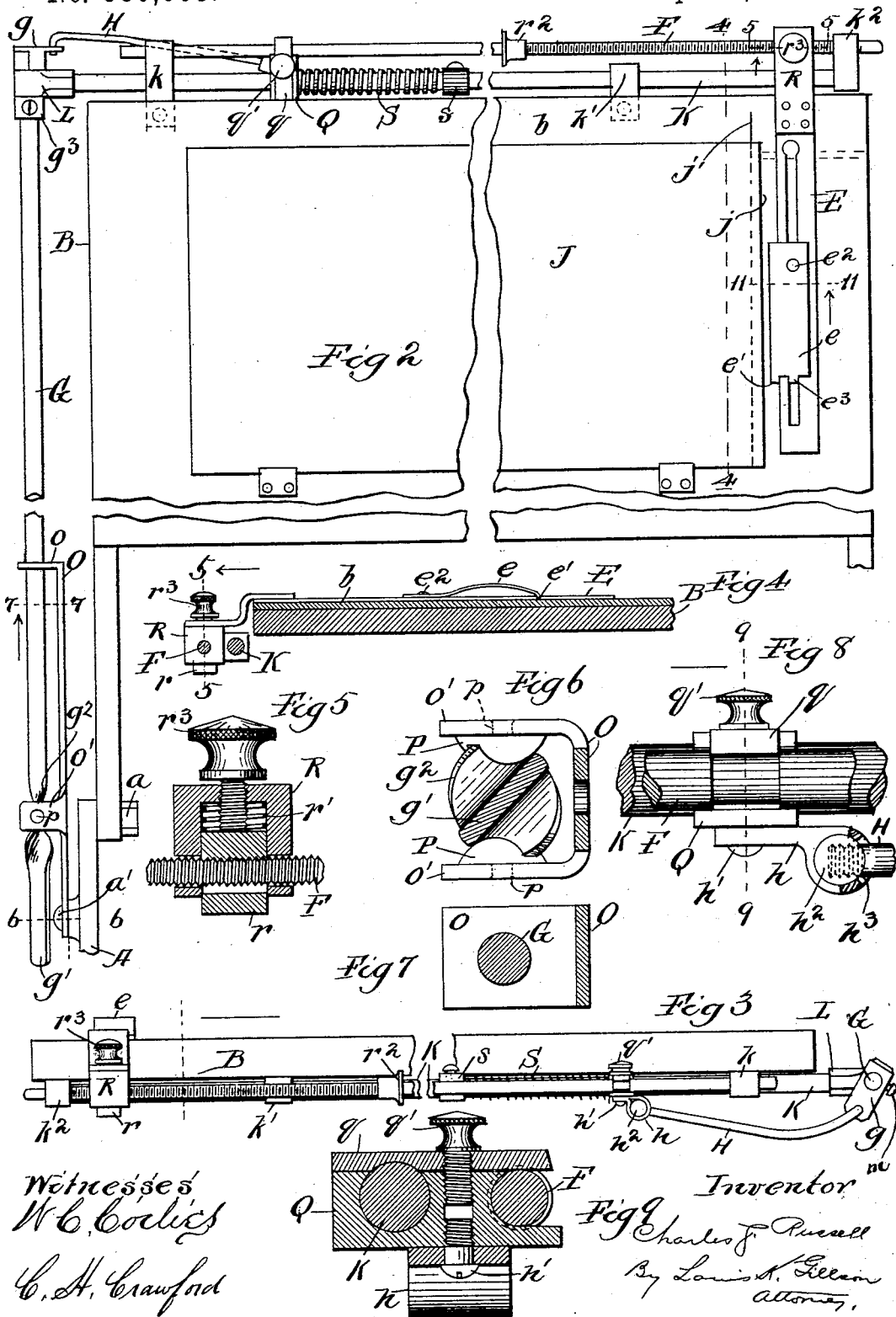
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UNITED STATES PATENT OFFICE.

CHARLES S. RUSSELL, OF PITTSBURG, PENNSYLVANIA.

FEED-GAGE FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 580,005, dated April 6, 1897.

Application filed May 18, 1896. Serial No. 591,951. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. RUSSELL, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Feed-Gages for Printing-Presses; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The object of the invention is to provide an automatic gage for adjusting paper fed to a job-printing press; and it consists of a finger moving over the tympan and actuated by the movement of the platen. The invention consists, further, in the various parts and arrangement of parts, as hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a printing-press with my improved gage in use thereon. Fig. 2 is an elevation of the face of the platen. Fig. 3 is an edge view of the platen. Fig. 4 is a sectional view on the line 4 4 of Fig. 2. Fig. 5 is a sectional view on the line 5 5 of Fig. 4. Fig. 6 is a sectional view on the line 6 6 of Fig. 2. Fig. 7 is a sectional view on the line 7 7 of Fig. 2. Fig. 8 is a detail of a portion of the gage mechanism. Fig. 9 is a sectional view on the line 9 9 of Fig. 8. Fig. 10 is a diagrammatic view of a portion of the press, showing the movement of a part of the gage mechanism. Fig. 11 is a sectional view, on an enlarged scale, on the line 11 11 of Fig. 2. Figs. 4, 5, 6, 7, 8, and 9 are on an enlarged scale.

My improved gage is adapted for use upon any of the jobbing-presses in which a swinging platen is used to cooperate with a fixed bed-plate.

I show in the drawings at A a portion of a press of this type, its platen being indicated by B, the platen being pivotally attached to the frame of the press at *a*, its bed at C, and its gripping-arms at D. As these portions of the press form no part of my invention and are of ordinary construction, I do not deem it necessary to more fully describe them, and for the same reason I omit reference to various other parts of the press which do not im-

mediately cooperate with the gage forming the subject of this application.

The gage-finger is shown at *e'* and is carried by an arm E, which projects downwardly from the upper edge of the platen and lies upon or but slightly removed from the tympan *b*, over which it is adapted to move laterally. The arm E is carried by a reciprocating rod F, above and parallel with the edge of the platen and carried in journal-blocks *k k'*. The block *k* is secured to the back of the platen so as to project beyond its edge, and another attaching-block is shown at *k'*, the blocks *k k'* being apertured to receive a rod K, which may be said to form the frame of the entire device. The block *k'*, already referred to, is fixed upon one end of the rod K. By this construction it will be seen that the rods F K are parallel.

The reciprocation of the rod F is accomplished by means of a rock-shaft G, carrying a crank-arm *g*, which is connected to the rod F by means of a pitman H and pivotally attached to a block Q, which slides upon the rod K and is fixed to the rod F in manner hereinafter described.

The rock-shaft G is journaled in a block L, secured to the end of the rod K at the right side of the press as viewed from the position of the operator, and the lower end of the rod G is journaled in a swinging arm O, which is pivotally attached to the frame A of the press by means of a screw-bolt *a'*, this pivotal attachment being at a point below the pivotal point *a* of the platen. The outer or swinging end of the arm O is bent laterally, as indicated at *o*, the lateral extension being apertured to form the bearing for the rod G. The lower end of the rod G is flattened, as indicated at *g'*, and the upper part of this flattened portion is twisted, as indicated at *g''*, to a spiral form. Ways are provided for the flattened portion of the rod G by forming lateral lugs *o'*, one upon each side of the arm O, and pivoting in each lug a slotted block P, the outer end of the pivot-pin *p* of each of the blocks P being slightly upset, so that it will not fall out when the rod G is disengaged from the block. A collar *g'''* is mounted upon the rod G and provided with a set-screw by means of which it may be fixed thereto, the function of the block being to form a stop

upon one side of the block L, the hub of the crank-arm *g* being mounted upon the opposite side of the block L, so that longitudinal movement of the rod G within this block is prevented.

The attachment of the pitman H to the block Q is by means of a rocking block *h*², into the apertured side of which the pitman H is screwed, this block being journaled within a loop *h*, secured to the block Q by means of a screw-bolt *h'*. The body of the loop *h* is provided with an aperture *h*³, within which the pitman H may freely play. The block Q is clamped to the rod F by means of a plate *q*, secured to the block K by a thumb-screw *q'*, a portion of the block Q being cut away to form a recess to receive the rod F, and the latter having an annular recess or groove to receive the block Q and the plate *q*. The block Q slides upon the rod K, and to prevent jarring I prefer to mount upon this rod a buffer-spring S, reacting against a collar s, fixed upon the rod.

The attachment of the arm E to the rod F is by means of a block R, to which the arm E is rigidly attached. The block R is apertured to loosely fit upon the rod F and is transversely apertured from below to receive a block *r*, which has a transverse aperture to receive and of greater diameter than the rod F. The portion of the rod F over which the arm E is adapted to be adjusted is screw-threaded, and the upper face of the aperture through the block *r* is correspondingly screw-threaded. An expansive spiral spring *r'* is placed within the aperture of the block R above the block *r*, whereby the screw-threads in the aperture of the block are forced into engagement with the threads upon the rod F, so that any movement of the block R upon the rod is prevented. A thumb-screw *r*² is set in the top of the block R, entering its aperture and bearing upon the top of the block *r*, whereby the block R may be rigidly fixed in its attachment to the rod F.

The arm E is quickly adjusted upon the rod F by loosening the thumb-screw *r*², pressing the block *r* upwardly with the finger, so as to disengage its threaded portion from the rod F, when the block R may be freely moved longitudinally as to the rod F. The fine adjustment of the arm E is accomplished by rotating the rod F, and for this purpose the rod is provided with a thumb-nut *r*².

The gage-finger *e'* is a downwardly-projecting corner of a leaf-spring *e*, secured at its upper end to the arm E by means of a rivet *e*², whose head is undercut to adapt it to the chamfered edges of the longitudinal slot in the arm E. The lower end of the leaf-spring *e* has a projecting finger *e*³, which engages the slot in the arm E and thereby prevents lateral movement of the spring relatively as to the arm. The engagement of the leaf-spring *e* with the arm E being frictional, it may readily be adjusted longitudinally upon the arm.

In feeding the press it is necessary only that

the operator be careful to place the sheet J somewhat to the left of the position it has to occupy in order to receive the impression of the type in the proper place. I have indicated the proper position of the left edge *j* of the sheet J by a line *j'* marked upon the tympan *b*. The operator having placed the sheet so that its edge *j* is farther to the left than the line *j'*, the function of the automatic gage is to engage the sheet by means of the finger *e'* and move it to the line *j*, the gage receding from the sheet as the platen recedes from the bed of the press.

The rocking of the rod G is due to its longitudinal reciprocation within the blocks P, this reciprocation resulting from the movement of the platen and the fact that the pivotal attachment of the swinging arm O is below the pivotal attachment of the platen B to the frame of the press. This will be readily understood by reference to the diagrammatic figure. The upper end *y* of the platen moves from the point at which it is shown in this figure to the point *x*. The distance from *y* to *a* being equal to the distance from *x* to *a*, the distance from *a* *y* to *a* plus the distance from *a* to *a'* must be equal to the distance from *x* to *a'* through *a*. The distance from *y* to *a'* in a straight line must be less than the distance between these points through *a*, and consequently less than the distance from *x* to *a'*. It follows, therefore, that as the platen moves from its open to its closed position the rod G must be withdrawn through the way-blocks P and rotated or rocked by reason of its spiral form.

It is necessary that the sheet J be brought to its proper position before contact with it of the grippers D, and for that reason the twisted portion of the rod G is not continued to its end, but passes beyond the blocks before the grippers D touch the paper.

The movement of the gage-arm being positive and the adjusting mechanism being such that the distance of its travel may be regulated precisely, the device makes it possible to gage the work accurately, a consideration of the utmost importance when printing with a plurality of colors and in other work in which it is necessary that the characters printed sustain a definite relation to others already upon the paper.

It is well known that in hand-feeding, the side gage being fixed and dependence being placed upon the skill of the operator in bringing the sheet to this gage, it is difficult, especially in quick-action presses, to bring the paper exactly to the gage. Either it falls a little short of touching the gage, or, being pressed too firmly against it, is caused to bulge outwardly, and when the hand is removed the elasticity of the sheet causes it to spring away from the gage. By the use of the device herein described the paper may be accurately placed upon the press without regard to the speed at which the latter may be driven.

The movement of the gage-arm is timed by

the adjustment of the twisted portion g^2 of the rock-shaft G within the way-blocks P, and this is accomplished by the adjustment of the crank-arm g upon the rock-shaft. To provide
 5 for this adjustment, the crank-arm carries a set-screw m , by means of which it is fixed in any desired angular position with reference to the shaft, the latter being turned so as to bring its twisted or spiral portion into such
 10 relation with the way-blocks that it will leave them before the grippers D contact with the tympan. As this adjustment moves the rod G longitudinally within the block L it involves a corresponding shifting of the crank-arm g
 15 and the collar g^3 upon the rod.

In making the press ready it becomes necessary to remove the gage-arm. This is readily accomplished by loosening the clamping-plate q and sliding the rod F in the block k
 20 until it is withdrawn from the block k^2 , when it may be withdrawn from the block k . The parts are as easily put together again, and the plate q falling into the angular depression formed for it in the rod F the adjustment of
 25 the gage-arm is not disturbed in the slightest degree.

While I deem the flattened and twisted form of the rock-shaft G as preferable, it is obvious that this form might be departed from, correspondingly-modified way-blocks being used.

The invention consists not only in the details of construction shown, but in actuating the gage-arms by means of a swinging arm pivoted to the press-frame away from the
 35 pivot of the platen and having its outer end connected with the platen. The longitudinal reciprocation of this swinging arm relatively as to the platen, due to the eccentricity of their angular movement, may be transmitted
 40 to the gage-arm in a variety of ways. Though I prefer the construction shown, I do not desire to be limited to it.

I claim as my invention—

1. The combination with a printing-press
 45 having a swinging platen, of a gage-arm adapted to reciprocate laterally over the platen, a swinging arm pivotally attached to the side of the press below the pivot of the platen and having its outer end connected with the
 50 platen, so that the swinging of the platen will cause the arm to swing and means for connecting the gage-arm with the swinging arm so that the reciprocation of the swinging arm relatively as to the platen, as the latter swings
 55 upon its pivots, causes the reciprocation of the gage-arm.

2. The combination with a printing-press having a swinging platen, of a gage-arm adapted to reciprocate laterally over the platen, a
 60 swinging arm pivotally attached to the frame of the press so as to swing through an arc eccentric to the arc of travel of the platen and having its outer end connected with the platen, and means for connecting the swinging
 65 arm and gage-arm whereby the reciprocation of the former relatively as to the platen causes the reciprocation of the gage-arm.

3. The combination with a printing-press having a swinging platen, of a gage-arm adapted to reciprocate over the platen, an exten-
 70 sible arm whose members are in screw-threaded engagement, pivotal attachment of the extensible arm to the frame of the press below the pivotal point of the platen, a journal-
 75 block for said arm secured to the platen to admit of the rocking of the upper end of said arm, a crank-arm secured to the upper end of the extensible arm and connection between
 such crank-arm and the gage-arm.

4. The combination with a printing-press, 80 having a swinging platen, of a gage-arm adapted to reciprocate over the platen, a reciprocating rod for carrying the gage-arm and being carried by the platen, means for adjusting the gage-arm longitudinally upon the rod, 85 a swinging extensible arm having a pivotal attachment to the frame of the press below the pivotal attachment thereto of the platen, and a journal-bearing in the platen, such extensible arm being jointed between the points 90 of its attachment to the frame and to the platen, its members being in screw-threaded attachment to each other, a crank-arm carried by the upper portion of the extensible arm, and a pitman connecting the crank-arm 95 and the reciprocating rod.

5. The combination with a printing-press, having a swinging platen, of a gage-arm for reciprocating over the face of the platen, a rod 100 attached at its upper end to the platen and fixed against longitudinal movement with reference thereto, and being flattened through a portion of its length from its lower end, a part of such flattened portion somewhat removed from the end of the rod being twisted, 105 a swinging arm pivoted to the frame of the press below the pivotal point of the platen, opposing pivoted blocks mounted on the swinging arm and having ways to receive the edges of the flattened portion of the rod, a 110 crank-arm mounted upon the upper end of the rod, and connection between the crank-arm and the gage-arm.

6. The combination with a printing-press having a swinging platen, of a gage-arm adapted to reciprocate over the platen, a rotatable 115 reciprocating rod for carrying the gage-arm, said rod having a screw-threaded portion and the attachment of the gage-arm thereto being by means of a block apertured to loosely receive the rod and having a recess to receive 120 a binding-block, a binding-block set within such recess and having a transverse aperture of greater diameter than the diameter of the rod, one face of such aperture being adapted 125 to the screw-threads of the rod, and means for forcing said face against the rod.

7. In a gage for printing-presses, having swinging platens, such gage being adapted to be secured to the platen, the combination 130 with a gage-arm adapted to reciprocate over the platen, a rotatable reciprocating screw-threaded rod, a block to which the gage-arm is attached and which is apertured to loosely

receive the rod and recessed transversely to such rod-aperture, a block adapted to such recess and having a transverse aperture of greater diameter than the rod, one face of
5 such aperture being adapted to the screw-threaded portion of the rod, and means for holding such face in engagement with the rod.

8. In a gage for printing-presses having swinging platens, the combination with a
10 gage-arm, of a rod for carrying the gage-arm, bearing-blocks adapted for attachment to the platen and within which such rod may reciprocate, a rocking crank-shaft, journal-bearing for such shaft carried by the platen, means
15 for preventing longitudinal movement of the shaft within such bearing, a pitman for connecting the crank of the shaft with the reciprocating rod, a swinging arm adapted to be pivotally secured to the frame of the press
20 below the pivotal point of the platen and having opposing way-blocks, the crank-shaft having a flattened and twisted portion adapted to the ways of such blocks.

9. In gage mechanism for printing-presses having swinging platens, such mechanism being adapted for attachment to the platen, the combination with a gage-arm for moving over the platen, a reciprocating rod for carrying the arm, bearing-blocks secured to the platen, for carrying the rod, a rock-shaft, a
30 bearing-block fixed to the platen for the rock-shaft, a crank carried by the rock-shaft, a pitman connecting the crank with the reciprocating rod, an arm adapted for pivotal attachment to the frame of the press, and hav-
35 ing ways for the reciprocation therein of the rock-shaft, such shaft having a straight and a spiral portion adapted for the engagement of such ways.

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

CHARLES S. RUSSELL.

Witnesses:

GEORGE B. SWEET,
CHARLES W. FERGUSON.