(No Model.) 5 Sheets—Sheet 1.

M. L. METZGER & G. W. BROWN.

RECEIVING BOX FOR RULING MACHINES.

No. 346,411. Patented July 27, 1886.

Fig. 1.

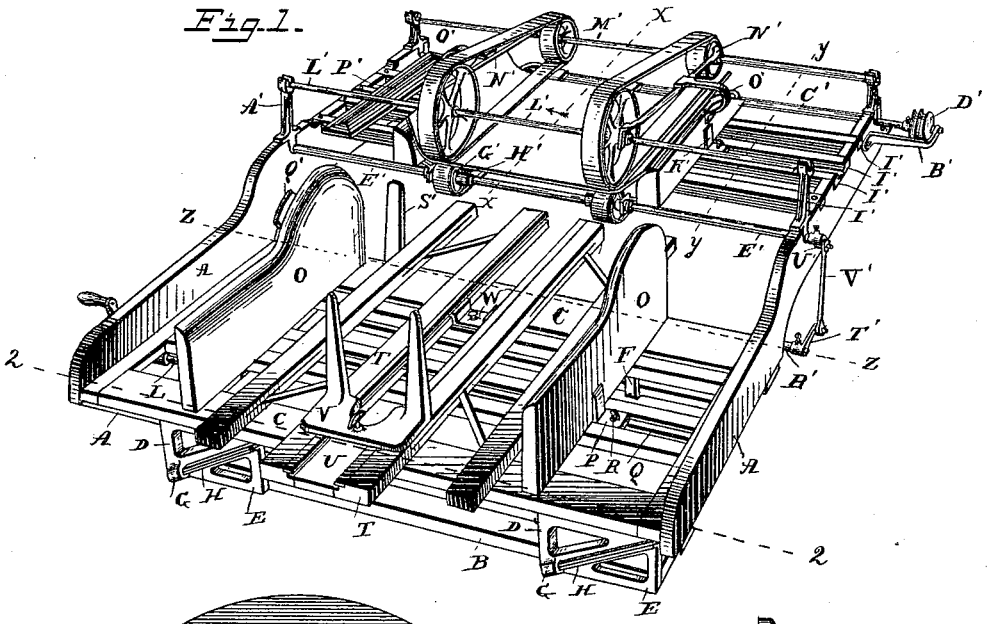
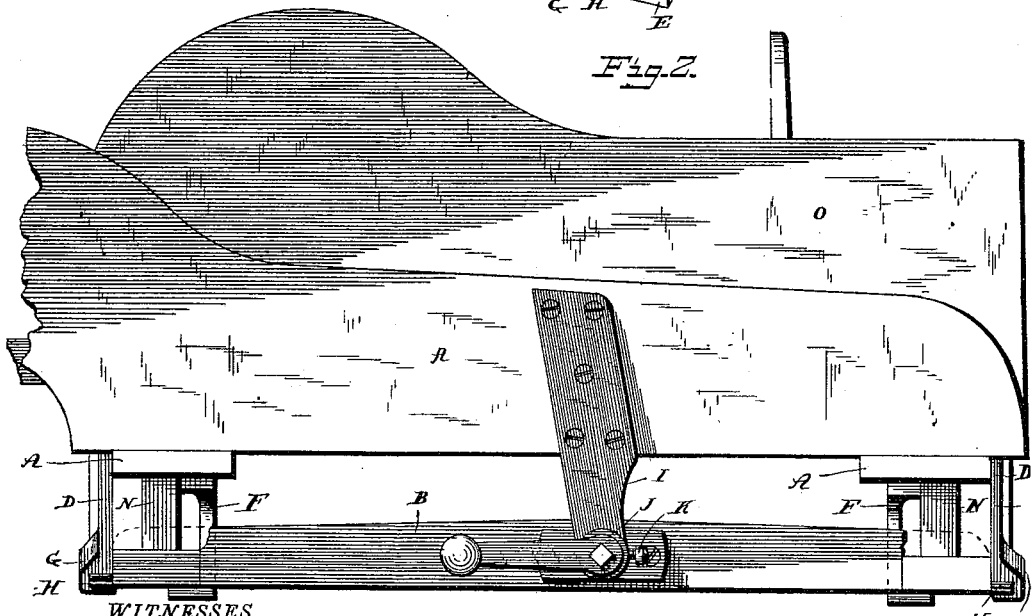


Fig. 2.



WITNESSES

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(No Model.) 5 Sheets—Sheet 2.

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Fig. 3.

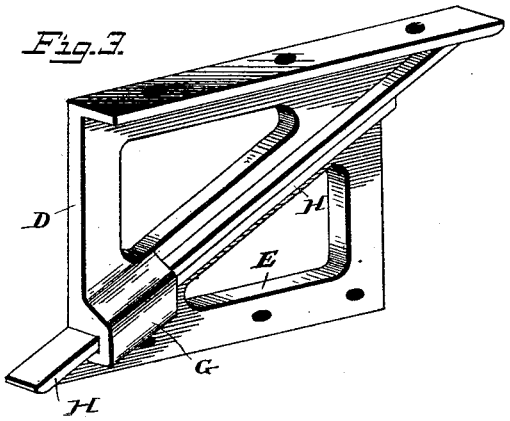

Fig. 4.

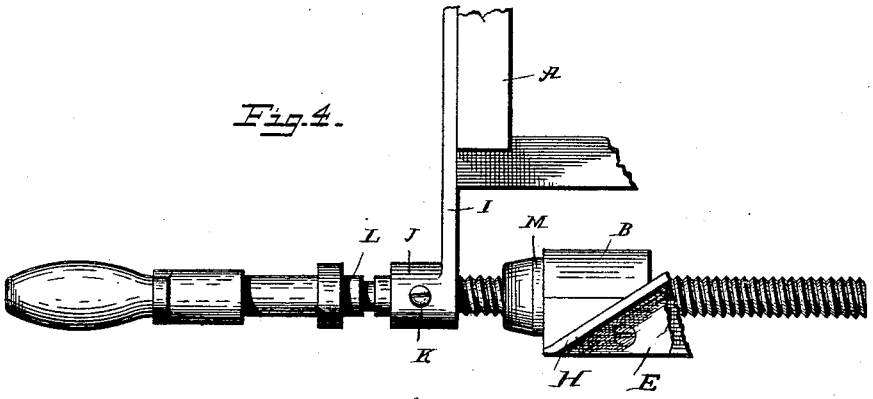

Fig. 7.

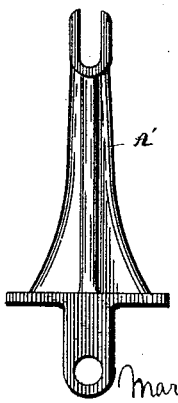

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Fig. 5.

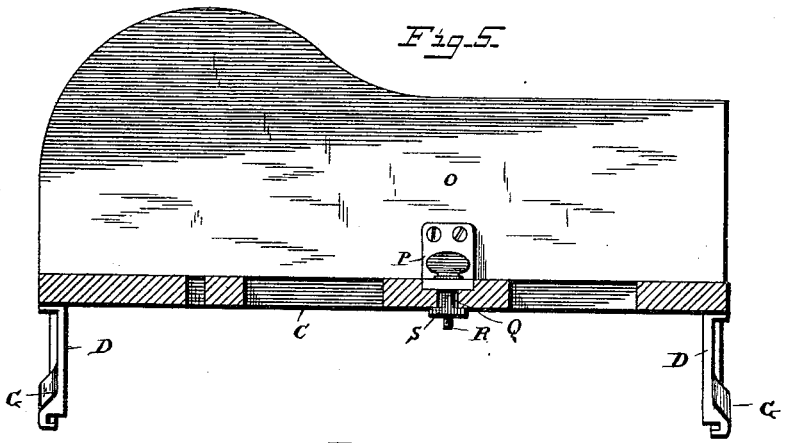


Fig. 6.

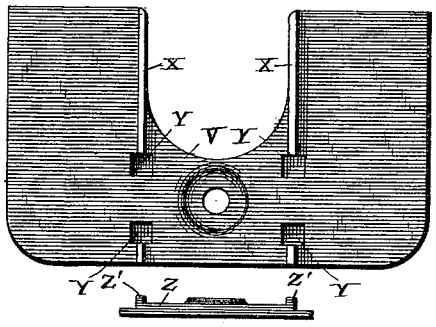
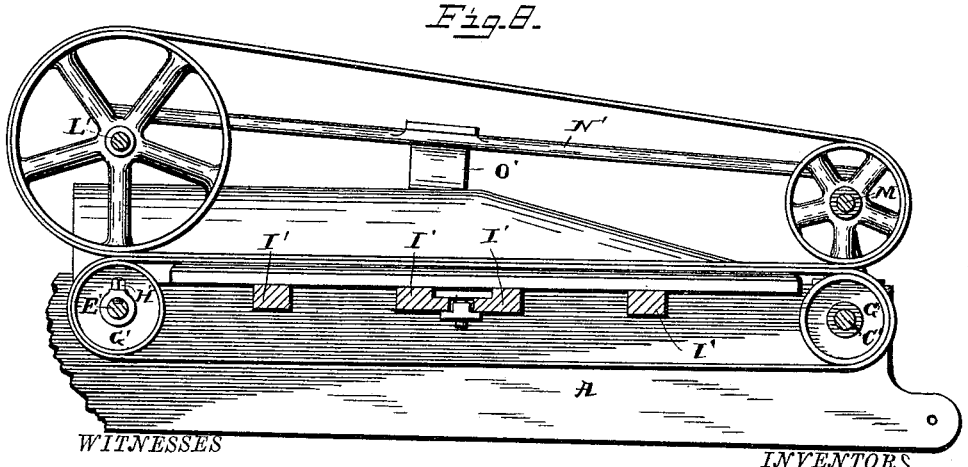


Fig. 8.



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(No Model.) 5 Sheets—Sheet 4.

M. L. METZGER & G. W. BROWN.

RECEIVING BOX FOR RULING MACHINES.

No. 346,411. Patented July 27, 1886.

Fig. 9.

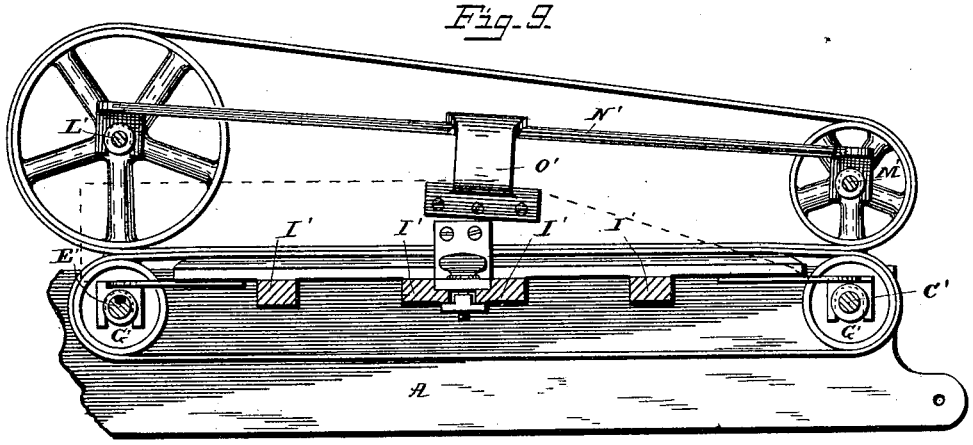


Fig. 10

Fig. 11.

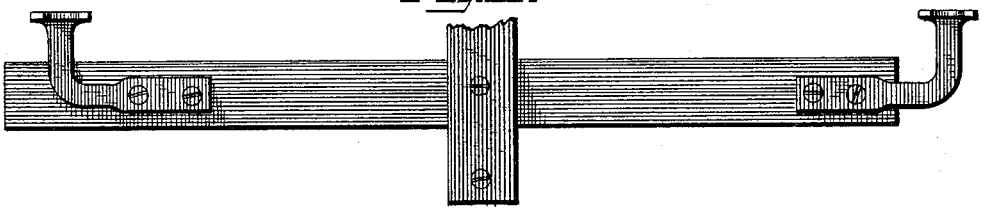
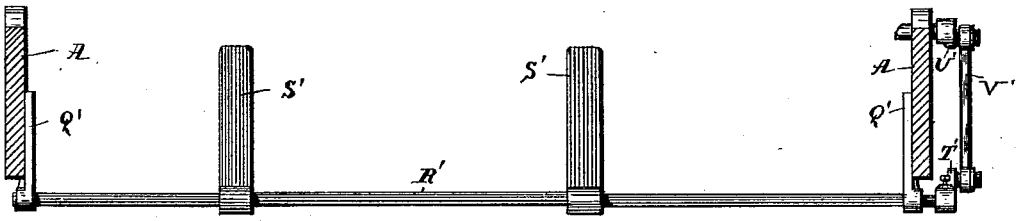


Fig. 12.



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RECEIVING BOX FOR RULING MACHINES.

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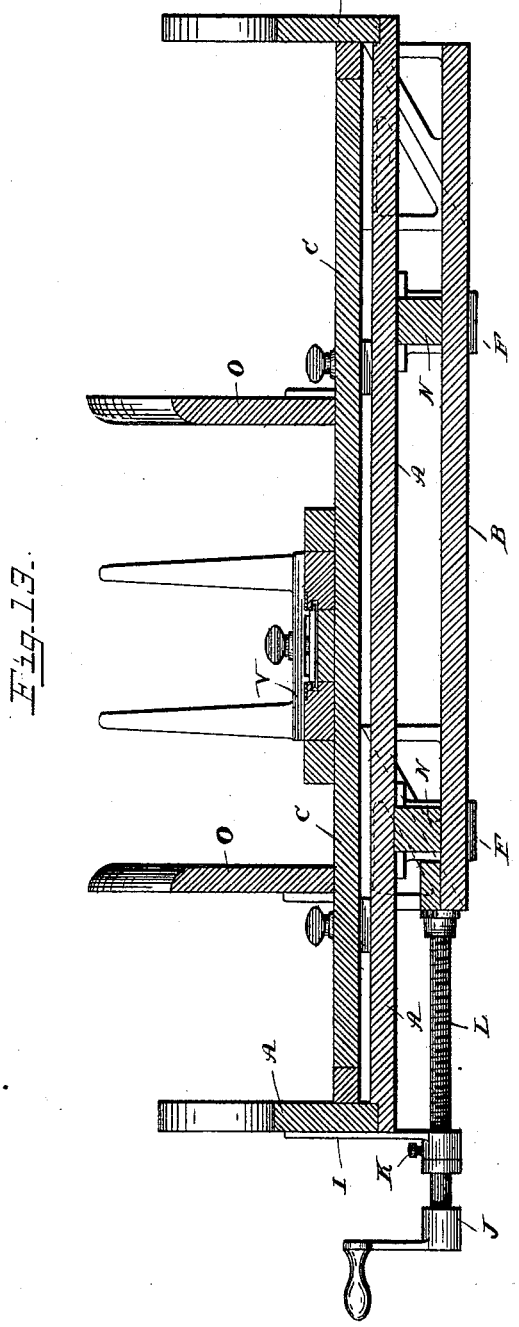

Fig. 17.

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UNITED STATES PATENT OFFICE.

MARTIN L. METZGER AND GEORGE W. BROWN, OF HARRISBURG, PENNSYLVANIA, ASSIGNORS TO W. O. HICKOK, OF SAME PLACE.

RECEIVING-BOX FOR RULING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 346,411, dated July 27, 1886.

Application filed October 26, 1885. Serial No. 180,990. (No model.)

To all whom it may concern:

Be it known that we, MARTIN L. METZGER and GEORGE W. BROWN, citizens of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Receiving-Boxes for Ruling-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in receiving-boxes for paper-ruling machines; and it has for its objects, first, to provide a box with adjustable sides and end, so that the person ruling, as the first few sheets of paper are received, can readily adjust the box to fit the size of the sheets; second, to provide a gage for the end of the box, which will, when set, always be at right angles to its sides; third, to provide the box with an adjustable frame or frames, so that it can be raised or lowered, and thus accommodate itself with relation to the feeding mechanism and to the size of the sheets being ruled; fourth, to provide means for feeding the paper into the receiving-box, and to so construct each set of the tape-wheels and its scoop that it will be adjustable with respect to the other set, but that the parts constituting one set will be relatively and permanently fixed with respect to that set, and, fifth, to provide means whereby the feeding mechanism may be run independently of the ruling-machine, so that no sheet of paper by the act of stopping the ruling-machine will be caught while passing through the tape-wheels and held there.

In the accompanying drawings, forming a part of this specification, and on which similar letters of reference indicate the same or corresponding features, Figure 1 represents a perspective of our improved receiving-box and feeding mechanism with a sheet of paper on its way through the tape-wheels, looking from the rear toward the front of the machine. Fig. 2 is a side elevation of the rear portion of the main frame; Fig. 3, a detached view of one pair of the plates for supporting the auxiliary frames. Fig. 4 is a detail view showing the screw-threaded rod and its connection with the frames; Fig. 5, a detail sectional view through a portion of the upper auxiliary frame, showing the connection of the sides of the receiving-box with said frame. Fig. 6 is an inverted plan view of the end board of the receiving-box and a side elevation of the plate by which it is secured to the floor thereof. Fig. 7 is a detached side elevation of one of the standards which support the shafts of the feeding mechanism; Fig. 8, a sectional view taken on the line $x\ x$ of Fig. 1, with the sheet of paper removed, and looking in the direction of the arrow. Fig. 9 is a view taken on the line $y\ y$ of Fig. 1, with the scoop dotted in, showing the adjustable connection of the scoop with the tape-wheels; Fig. 10, a detached view of the bar for connecting the upper pulleys of the feeding mechanism; Fig. 11, an inverted plan view of the scoop; and Fig. 12 is a view taken on the line $z\ z$ of Fig. 1, with the receiving-box removed, and showing the paddle-shaft and its paddles, as also the means of operating the same; and Fig. 13, a longitudinal sectional view of our machine, taken on the line 2 2 of Fig. 1, showing the floor of the receiving-box closed.

The letter A designates the side pieces of the main frame, curved upwardly near their center, so as to place the feeding mechanism in an elevated position with respect to the receiving-box, and provided on the under and upper sides of the lower portion with the auxiliary frames B and C, to the front and rear edges of both of which are secured the triangular supporting-plates D and E, as seen in Fig. 2, the purpose of which will hereinafter appear. The cross-pieces of the main frame, as seen in Fig. 2, are each provided with a foot, F, whose lower ends are bent at right angles to the feet proper, and embrace the cross-pieces of the auxiliary frame B. The offices of these feet is to support the main frame, and to at the same time serve the purpose of guides for the auxiliary frame B. The plates D, Fig. 3, attached to the upper auxiliary frame, are provided at one end with lugs G, channeled on their inner face, so as to fit over the rib H of the lower plate. The side of the main frame, as seen in Fig. 2, is provided with a bracket, I, terminating in a journal-box, J,

having a set-screw, K, which, as seen in Fig. 4, fits into the groove on the screw-threaded rod I. The object of this is to prevent the screw-threaded rod from slipping in the direction of the arrow, so that whatever motion is imparted to the crank-handle will be, through the screw-threaded plate M, imparted to the auxiliary frame, and move it backward or forward, according to the direction in which the crank is turned, all of which will be more fully explained further on.

The letter N represents wooden blocks secured to the main frame, on its under side, so as to keep it the proper distance from the lower auxiliary frame.

O designates the sides of the receiving-box provided with a clamp, *p*, fitting in the groove Q of the cross-pieces of the frame, and having a screw, R, extending therethrough, and which latter fits within a block, S, on the under side of the cross-piece. This block is T-shaped in cross-section, and by means of the screw and block the sides of the box may be moved laterally in either direction, to suit the paper received, and, when found to be the correct distance apart, their position fixed by tightening the screw.

The floor of the receiving-box is composed of the extensible frame T, consisting of the middle and side pieces, connected together by strips pivotally secured within the slots in the edges of the middle and side pieces. We have formed the floor thus to admit of the receiving of any width of paper. The middle pieces are held together at one end by a block, U, and their inner edges are provided with grooves, within which slide the end board, V, and U-shaped binding-nut W, so that by clamping the nut W the central portion of the floor of the receiving-box is fixed, while its lateral members may be extended at will by a slight pressure of the hands. As seen in Fig. 6, the under side of the end board consists of a plate provided with ribs X, by means of which it is guided in its passage on the floor of the box, and recesses Y. The plate by which it is secured is provided with a raised portion, Z, from which project lugs Z′, which fit within the recesses Y, just mentioned. The sides of the plate fit within grooves in the edges of the boards constituting the central portion of the floor of the receiving-box, and a screw passing through the end board and the plate draws them firmly together, so that when the operator has pushed the end board the proper distance for the sheets being ruled he fixes it in said position by turning the screw. We have adopted this mode of fastening the end board, because we desire to have it in a line exactly at right angles to the side pieces, and this result we are able to attain by means of the lugs and recesses just described.

We shall now proceed to describe the upper and forward portion of the machine, which constitutes the feeding mechanism.

The letter A′ designates one of the standards which support the shafts of the feeding mechanism, and is clearly shown in Fig. 7. It is secured to the top of the frame by means of screws, and its lower end extends down into the side of the frame and is provided with a journal-box for the reception of a lower shaft, while its upper end terminates in a recess for the reception of the upper shaft.

The letter B′ designates a bracket which supports one end of the lower forward shaft, C′, as seen in Fig. 1, and on which is a pulley, D′, which receives its motion from the same power which drives the ruling-machine, and imparts it to the shaft to which it is secured. The lower shafts, C′ and E′, have key-seats F′, as seen in Fig. 8, which extend throughout their length, and intermediate the bearings are provided with small pulleys G′, firmly secured to the shaft by means of set-screws H′, which fit through the hub of the wheels and into the key-seats.

The side pieces, A, are connected together by cross-pieces I′, the middle ones of which are grooved on their upper surface, and form guides for the clamp K′, attached to the scoop, and by means of which the scoop is moved laterally in either direction, as required.

The four upper pulleys rotate loosely on the upper shafts, L′ and M′, and the two on each side are connected by means of the connecting-bar N′, which, as seen in Fig. 10, is provided at each end with a slotted lug, which fits down upon a groove on the hub of the pulley.

The ends of the scoop, as seen in Fig. 11, are provided with arms having lugs similarly constructed to those just described, which fit over grooves on the lower pulleys, and the scoop and the connecting-rod are fastened together by means of the arm O′. Each scoop and its tape-wheels are relatively and permanently fixed with relation the one to the other, so that when you move the scoop you move all the pulleys on that side with it. The two upper pulleys on each side are connected together by belts, as are also the lower ones, and the frictional contact of the paper with the belts and the belts with each other, when in motion, is what carries the paper through into the receiving-box.

The letter P′ refers to the wooden slat shown on top of the machine in Fig. 1, its under side having a block, which fits between the middle cross-pieces I′ I′, and one or more of these slats are put under the paper and between the pulleys, according to the width of the sheets of paper passing through, their purpose being merely to evenly support the sheet in its passage.

Secured to the inner sides of the frame A are brackets Q′, which support a rock-shaft, R′, to which are attached the paddles S′. One end of this shaft is provided with a crank, T′, and one end of the shaft E′ is provided with a smaller crank, U′, and the two cranks are connected together by a pitman, V′, so that when

the shaft E′ is in motion a general rocking motion is imparted to the shaft R′, and the paddles rock to and fro as the sheets come from the feeding mechanism, and press them forward with an easy positive motion against the end board, V.

The operation of our improved machine is as follows: The operator takes a sheet of paper of the size undergoing ruling, makes one edge thereof coincide with the exterior edge of the scoop on one side. He then loosens the clamp K′ of the other scoop and moves that scoop and its attached pulleys until the other edge of the sheet coincides with the exterior edge of that scoop. Motion is given to the shaft C′, and the sheet assumes the form shown in Fig. 1, so as to be comparatively rigid or stiff, in order that when it descends from the upper to the lower frame, it will have no tendency to double up or fall upon itself, but will smoothly reach the floor of the receiving-box, while the paddles give it a final push and shove it against the end board. The operator then stops the machine, adjusts the sides of the box to the width of the paper, the end board with relation to the paddles and the length of the sheet, when the machine is ready for a continuous run.

It is to be observed that by the arrangement of plates D, as herein shown and described, the frames are held one against the other, so that if in ruling paper of unusual size there is any tendency (by reason of the extension of the floor of the receiving-box in either direction) of the frame to tilt, the lugs on the upper plates bind against the ribs on the lower plates, and the frames are thus kept perfectly even. It is further to be observed that in feeding short sheets of paper into the receiving-box there would be a tendency, on account of the height between the feeding mechanism and the receiving-box, for them in their descent to reverse their movement and shoot under the tape-wheels. It is for this reason we have constructed the upper and lower auxiliary frames, so that in ruling short sheets the operator turns the crank, and the upper auxiliary frame rides upon the lower auxiliary frame and raises itself nearer the tape-wheels, and until it is almost even therewith, should the operator desire to so shorten the distance between them. In this way any tendency which short sheets might have to reverse their movement is entirely overcome by raising the upper frame to accommodate itself with relation to the tape-wheel and the size of the sheets.

It is to be noticed that we have constructed the bearings for the upper shafts, L′ and M′, and the connecting-rods N′ in such a manner as to admit of whatever little play might be necessary by reason of rumpled paper and want of accurate adjustment, &c. It is also to be noticed that we do not drive our feeding mechanism from the ruling-machine itself, but from the shaft which imparts motion to the ruling-machine, so that when the ruling-machine is stopped our feeding mechanism is unaffected, and should any sheet be in the feeding mechanism on its way to the receiving-box it still continues its passage until deposited, when the operator may stop the feeding mechanism.

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

1. In a receiving-box for ruling-machines, the combination, with the adjustable sides and end board, of the flooring consisting of bars provided with slots, and having connecting strips, whereby the bars may be extended.

2. In a receiving-box for ruling-machines, the combination, with the adjustable sides, of the flooring provided with ways in which the end board travels, and the slots and connecting-strips secured within said slots, whereby the flooring is capable of extension.

3. In a receiving-box for ruling-machines, the end board provided with guiding ribs and recesses, and the plate provided with lugs to fit within the recesses of the end board, and a clamp to hold the two firmly together.

4. A receiving-box for ruling-machines, consisting of the adjustable sides, means to secure them, the end board, means to secure it, and the flooring consisting of bars, two of which are provided with ways in which the end board is adapted to travel, and have slots, and strips pivotally secured within said slots, whereby the flooring may be extended to reach the adjustable sides.

5. In a receiving-box for ruling-machines, the combination, with the flooring thereof provided with ways, of the end board having ribs and depressions in the underside thereof, and the plate having lugs agreeing with the depressions, and projecting ends adapted to engage the ways.

6. In a receiving-box for ruling-machines, the combination, with the main frame, of auxiliary frames supported by the main frame and adjustable with respect to the said main frame and to each other.

7. In a receiving-box for ruling-machines, the combination, with the main frame, of auxiliary frames supported by the main frame, and having supporting-plates provided with rails, the said rails of one frame being adapted to travel upon the rails of the other frame, whereby the auxiliary frames are made adjustable with respect to the said main frame and to each other.

8. In a receiving-box for ruling-machines, the combination, with the main frame thereof, of the auxiliary frames having supporting-plates, one of which is provided with a rail, and the other of which is provided with a rail and an encircling-lug.

9. In a receiving-box for ruling-machines, the combination, with the main frame thereof and the adjustable sides and end board, of the rock-shaft provided with paddles, and means

to actuate the same, whereby the paper is pushed positively against the end board.

10. The combination, with the main frame and the upper and lower shafts located thereon and provided, respectively, with pulleys and belts, of the blocks having connecting-rods whereby said blocks and pulleys are connected together.

11. The combination, with the main frame and the upper and lower shafts provided, respectively, with pulleys and belts, of the blocks yieldingly connected with the pulleys and provided with clamps, whereby the pulleys and blocks may be secured as desired.

12. The combination, with the main frame, of a receiving-box carried thereby, and consisting of adjustable sides and end board and a flooring, and two sets of shafts, each shaft having a pulley, the belts fitting over said pulleys, the pulleys on the upper shafts, which have the same belt, being connected together and to the block which bends the paper.

13. The combination, with the main frame, of the receiving-box consisting of the adjustable sides and end board, the flooring, the rock-shaft having paddles, the delivering mechanism consisting of pulleys and belts, which carry the paper, and the auxiliary frames constructed to be vertically adjustable with respect to each other, the upper of which carries the said receiving-box and the flooring.

In testimony whereof we affix our signatures in the presence of two witnesses.

MARTIN L. METZGER.
GEO. W. BROWN.

Witnesses:
D. C. MAURER,
EDWIN L. BRADFORD.