

No. 656,524.

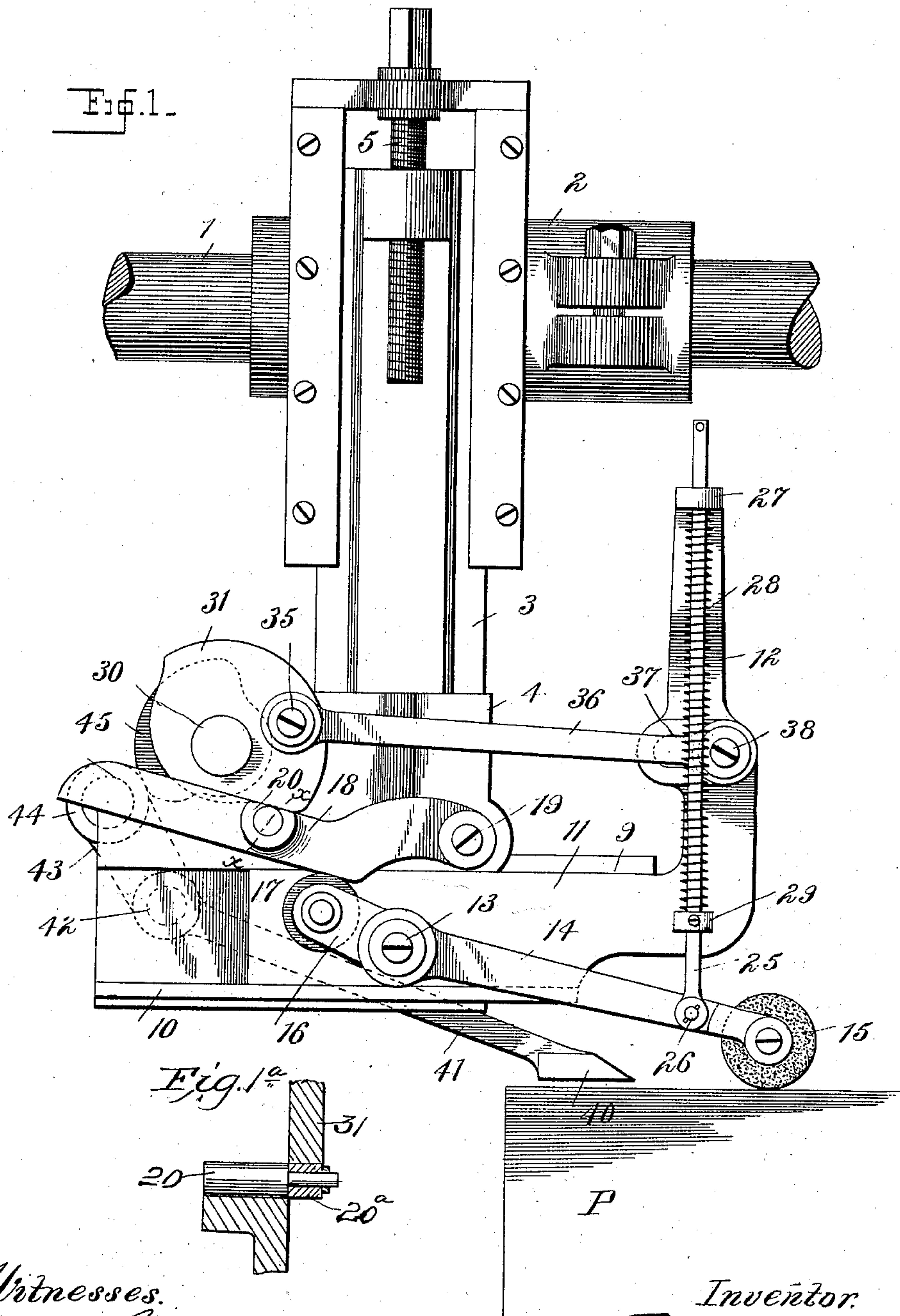
Patented Aug. 21, 1900.

T. C. DEXTER.
PAPER FEEDING MACHINE.

(Application filed Nov. 14, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses.
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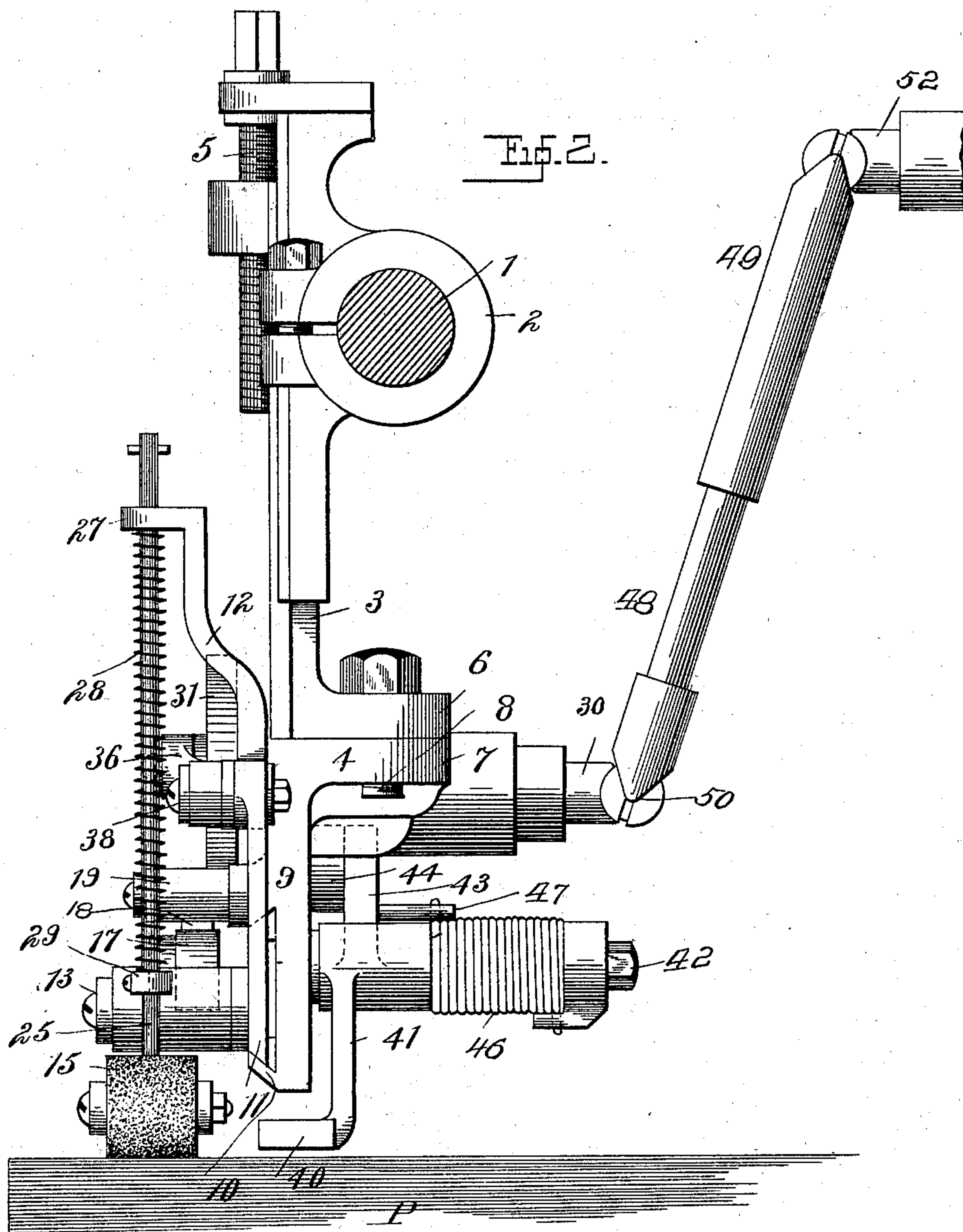
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3 Sheets—Sheet 2.



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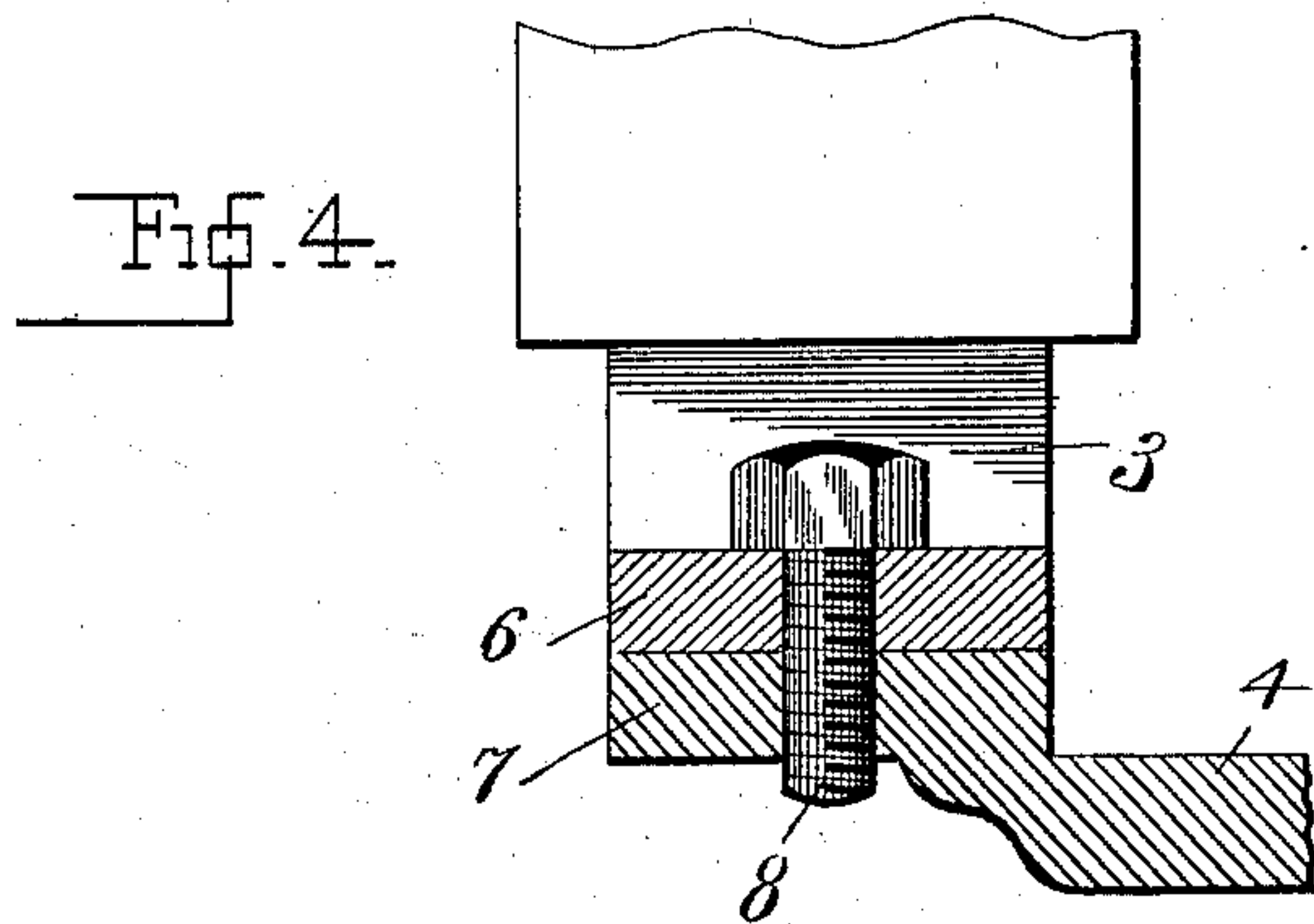
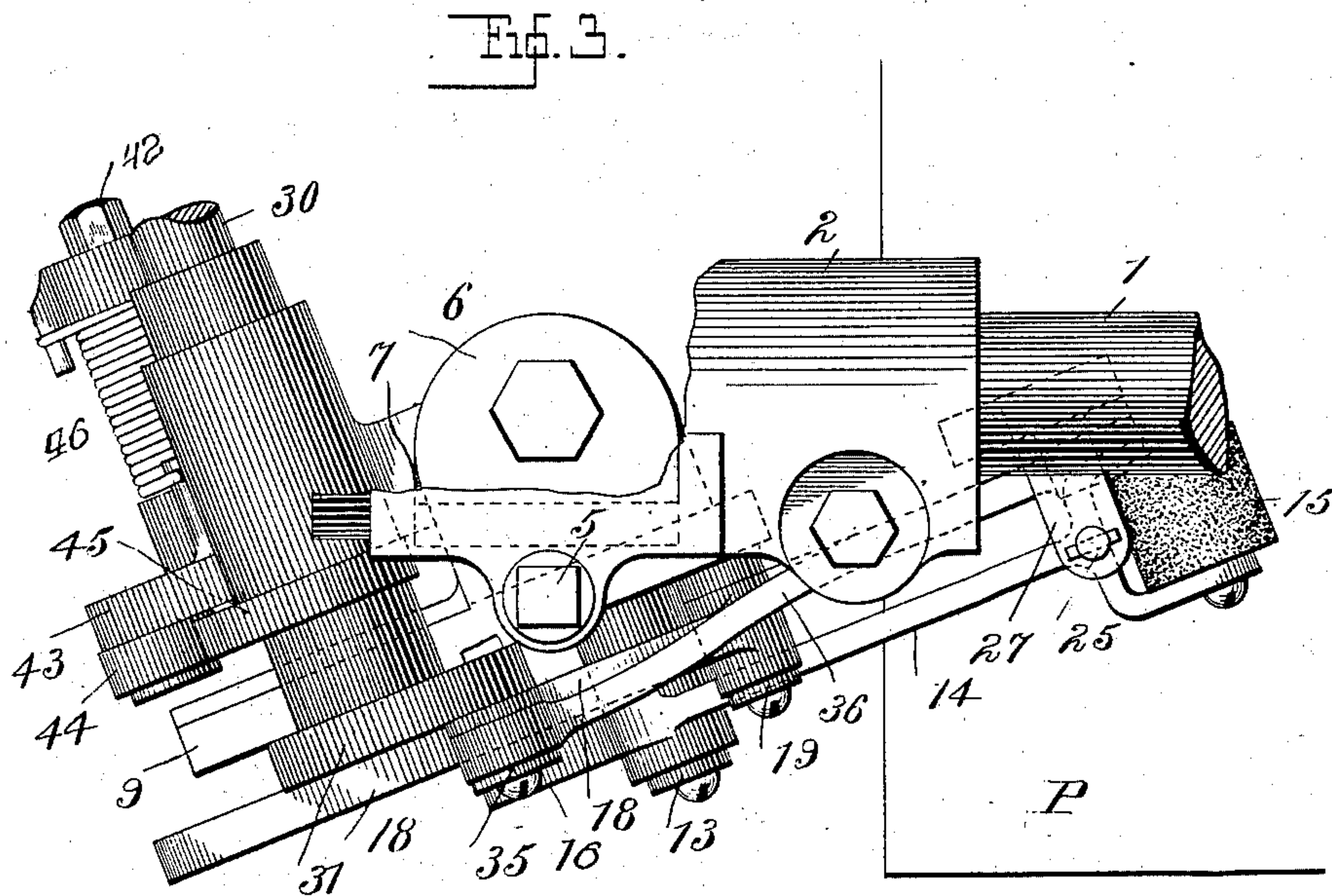
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK.

PAPER-FEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,524, dated August 21, 1900.

Application filed November 14, 1899. Serial No. 736,946. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, residing at Pearl River, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Paper-Feeding Machines, of which the following is a specification.

My invention relates to improvements in paper-feeding machines of the sheet-buckling type, in which the successive sheets of paper in an automatically-adjustable pile are buckled and separated from the pile and then fed off from the pile to the printing-press, paper-folding machine, ruling-machine, or other machine designed to operate upon the paper. In paper-feeding machines of this type the sheet-buckling mechanisms are usually arranged transverse of and above the pile of sheets and are not adjustable horizontally, so that the movement of the buckling-finger will be directly across the sheet or parallel with the rear edge. In another form of such mechanisms the buckling-finger is horizontally adjustable, but is constructed to oscillate in a curvilinear direction. In buckling the corner of a sheet with such mechanisms, however, the sheet naturally buckles in a direction approximating the diagonal of the sheet, so that the movement of the buckling-finger in a transverse direction or a curvilinear direction in a measure restrains the natural buckling movement of the sheet on its diagonal, and this straining of the sheet, particularly with large sheets of thin paper, is liable to rumple and sometimes tear the sheets.

The main object of my present invention is to provide a sheet-buckling mechanism adjustable upon a vertical swivel and having a rectilinearly-reciprocating buckling-finger and a universally-adjustable driving mechanism, in which the buckling-finger will be adjustable horizontally or parallel with the surface of the pile of sheets, so that the mechanism may be adjusted to cause the buckling-finger to move at any desired horizontal angle with relation to the sheet. With such a mechanism the buckling-finger can be adjusted to reciprocate in the line of natural

buckle of the sheet approximating the diagonal.

A further object of my present invention is to simplify and improve the general structure of sheet-buckling mechanisms.

In order that my invention may be fully understood, I will first describe the same with reference to the accompanying drawings and afterward point out the novelty more particularly in the annexed claims.

In said drawings, Figure 1 is a rear elevation of one of a pair of my improved sheet-buckling mechanisms. Fig. 1^a is an enlarged detail sectional view on the line *xx* in Fig. 1. Fig. 2 is an end elevation of same. Fig. 3 is a detail plan view, with parts broken away, illustrating one of the possible adjusted positions of my improved sheet-buckling mechanism. Fig. 4 is a detail sectional view illustrating the vertical swivel of one of my sheet-buckling mechanisms.

My improvements are designed for use with a machine of the same general construction as shown in my Patents Nos. 623,769 and 623,770, granted April 25, 1899, and I will only describe in my present case so much of the mechanism as will be necessary to a proper understanding of my present invention.

The pile of paper *P* is designed to be supported upon any suitable construction of vertically-adjustable table, which is not shown, but which is well understood.

1 is a part of the buckler-supporting frame mounted in any suitable manner upon the main frame of a paper-feeding machine. The bar 1 is the part of the frame which extends transversely of the pile of sheets.

2 is a bracket adjustably mounted upon the bar 1, and 3 4 are upper and lower sections, respectively, of a vertically-adjustable slide which is mounted in guideways in the rear face of the bracket 2 and adjusted to the desired height by means of a screw 5. The sections 3 and 4 of the slide are formed with ears or lugs 6 7, through which passes a vertical swivel-bolt 8, which adjustably secures the parts 3 and 4 together, so that the part 4 may be adjusted upon the part 3 to any desired angle for the purpose which will

presently appear. The sheet-buckling mechanism is mounted upon the lower part 4 of the slide.

9 is a horizontally-extending plate formed integral with the lower section 4 of the slide and formed upon its rear face with horizontal flanges 10, providing a guideway in which reciprocates the buckler-carriage 11. The buckler-carriage 11 is in the form of a plate having a vertically-extending bracket-arm 12.

Journalled upon a bolt 13, rigidly mounted in the buckler-carriage 11, is the buckling-finger 14, carrying in its forward end a cylindrical block of rubber 15 and having a heel 16, projecting rearwardly from the journal 13 and carrying an antifriction-roller 17.

18 is a lever journalled at 19 to the lower section 4 of the slide and provided with an antifriction-roller 20^a for the intermittent engagement of a cam presently referred to. The roller 20^a is journalled on the stud 20, projecting from the rear face of lever 18, as shown in Fig. 1^a of the drawings. The lever 18 is formed with a straight lower face or edge, which rests in contact with the antifriction-roller 17 in the heel of the buckler-finger, said roller traveling upon said straight edge or face during the reciprocation of the buckler-carriage.

25 is a rod journalled upon a pin 26, secured to the buckling-finger 14 and projected vertically therefrom through the opening in a guide-finger 27, formed integral with the carriage bracket-arm 12.

28 is a spiral spring mounted upon the rod 25 and confined between the guide-finger 27 at its upper end and an adjustable collar 29 at its lower end, the collar 29 being secured to the rod 25. The tension of the spring-rod 25 holds the buckling-finger in engagement with the pile with an effective force to cause the friction-block 15 to engage and buckle a sheet. It will be observed that the bracket-arm 12 and buckling-finger 14 are both mounted upon and reciprocate with the carriage 11.

30 is a short rotary shaft journalled in the lower section of the vertically-adjusted slide 3 4, and 31 is a cam keyed to said shaft and adapted to intermittently engage the antifriction-roller 20^a, mounted in the lever 18, for the purpose of causing the lever 18 to intermittently raise the buckling-finger away from the sheet against the action of the spring device just described.

35 is a crank-pin, and 36 is a pitman journalled at one end of the crank-pin 35.

37 is a slot formed in the bracket-arm 12, and 38 is a stud adjustably mounted in the slot 37 and having the opposite end of the pitman 36 journalled to it. By the rotation of the crank-pin 35 the carriage is caused to reciprocate forward and back in its guideway formed in the lower section of the vertically-adjustable slide. The adjustability of the stud 38 enables the operator to readily regu-

late the operating position of the buckling-finger upon the pile after the whole buckling mechanism has been placed into approximately-correct position by the adjustment of the bracket 2 upon the bar 1 and the adjustment of the slide 3 4 in the bracket 2.

40 is a holding-down foot or clamp formed at the forward end of an arm 41, which is journalled upon pin 42, projecting from the forward face of the plate 9. A torsional spring 46, mounted upon pin 42, is adapted to engage the pin 47 on heel 43 of arm 41 for holding the foot or clamp 40 into engagement with the pile of sheets. The heel 43 projects rearwardly from the journal of the arm 41, and an antifriction-roller 44 is journalled in said heel and is adapted to be engaged intermittently by a cam 45, keyed to the short shaft 30.

As shown in Fig. 3, the sheet-buckling mechanism may be adjusted to any desired horizontal angle to cause the buckling-finger to reciprocate in a direction approximating the natural direction of buckle of a corner of a sheet. The operation will be clear from the above description.

The short rotary shaft 30 is operated by some suitable form of universally-adjustable operating mechanism. This adjustable operating mechanism is preferably in the form of a telescoping shaft the sections of which have universal-joint connections with the short shaft 30 and the driving-shaft of the machine, respectively, such a structure being covered, broadly, by my application filed September 21, 1899, Serial No. 731,203, for improvements in paper-feeding machines.

48 and 49 represent the telescoping sections of the driving-shaft, the shaft-section 48 being connected with the short shaft 30 by a universal joint 47, while the shaft-section 49 is connected, through universal-joint connection 51, with a short driving-shaft 52. By the use of this universally-adjustable driving-shaft it will be clear that the sheet-buckling mechanism may be adjusted vertically, transversely, longitudinally, and horizontally with respect to the pile of sheets without interfering with the operation of the buckling mechanism.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, in a paper-feeding machine, of a support for a pile of sheets, with a rectilinearly-reciprocating sheet-buckling finger, a buckling-finger support adjustably swiveled upon an axis which is vertical with relation to the pile of sheets, and a universally-adjustable driving mechanism connected with the buckling-finger, whereby the buckling-finger can be adjusted in a horizontal plane to work at any desired horizontal angle upon the pile, substantially as set forth.

2. The combination, in a paper-feeding machine, of a support for a pile of sheets, with a suitable sheet-buckling mechanism including

a holding-down foot or clamp and a rectilinearly-reciprocating buckling-finger, a support for said buckling mechanism, a vertical swivel adjustably connecting the buckling mechanism with the support, and suitable universally - adjustable driving mechanism for the buckler mechanism, whereby the buckling-mechanism can be adjusted to cause the buckling-finger to operate at any desired horizontal angle over the pile, substantially as set forth.

3. The combination, in a paper-feeding machine, of a support for a pile of sheets, with suitable sheet-buckling mechanism adjustably mounted upon a vertical swivel and provided with a holding-down foot or clamp and a rectilinearly-reciprocating buckling-finger, and a driving-shaft having universal-joint connection with the buckling mechanism, substantially as set forth.

4. The combination, in a paper-feeding machine, of a support for a pile of sheets, with suitable sheet-buckling mechanism adjustably mounted upon a vertical swivel, and including a holding-down foot or clamp and a rectilinearly-reciprocating buckling-finger, and a sectional telescoping shaft one section of which has universal-joint connection with the buckling mechanism, substantially as and for the purpose set forth.

5. The combination, in a paper-feeding machine, with a support for a pile of sheets, of a buckler-supporting frame mounted above said pile-support, a bracket adjustable upon said frame transversely of the pile, a slide vertically adjustable in said bracket, suitable sheet-buckling mechanism vertically swiveled to said slide and adjustable to any desired horizontal angle, and universally-adjustable driving mechanism for said sheet-buckling mechanism, substantially as set forth.

6. The combination, in a paper-feeding machine, with a support for a pile of sheets, of a buckler-supporting frame mounted above said pile-support, a bracket adjustable upon said frame transversely of the pile, a slide vertically adjustable in said bracket and formed of upper and lower sections, a vertical swivel adjustably securing together the upper and lower sections of said slide, suitable sheet-buckling mechanism mounted upon the adjustable lower section of said slide, and a driving-shaft having universal-joint connection with the buckling mechanism, substantially as set forth.

7. In a paper-feeding machine, the combination of a support for a pile of sheets, with a buckler-supporting frame, a rotary shaft journaled in said frame, a reciprocating buckler-carriage mounted in said frame, a buckler-finger journaled upon said carriage, a holding-down foot or clamp mounted upon the frame, a crank upon the rotary shaft, a pitman connecting the crank with the buc-

kler-carriage, means for operating said rotary shaft, and means controlling the buckling-finger, substantially as set forth.

8. In a paper-feeding machine, the combination of a support for a pile of sheets, with a buckler-supporting frame formed with a guide way or track, a buckler-carriage reciprocating in said guideway or track, a buckler-finger journaled upon the carriage, a shaft journaled in the supporting-frame, means for controlling the buckler-finger, a crank upon said shaft, a pitman journaled upon said crank at one end, and a stud adjustably mounted upon the carriage and having the other end of said pitman journaled to it, a holding-down foot or clamp, and means for operating said foot or clamp, substantially as set forth.

9. In a paper-feeding machine, the combination of a support for a pile of sheets, with a buckler-supporting frame formed with a guide way or track, a shaft journaled in said frame, a buckler-carriage reciprocating in said guide way or track, a buckler-finger journaled upon said carriage and formed with a heel projecting rearwardly from its journal, a lever journaled upon the buckler-supporting frame and adapted to intermittently engage the heel of the buckler-finger, a cam on said shaft adapted to intermittently engage said lever for operating it, a crank on said shaft, a pitman connected with said crank and adjustably connected with the carriage, and a spring device engaging the buckling-finger, substantially as set forth.

10. In a paper-feeding machine, the combination of a support for a pile of sheets, with a buckler-supporting frame, suitable sheet-buckling mechanism including a reciprocating carriage operating in the frame and a buckling-finger mounted upon the carriage, a rotary crank, a pitman connected with said crank and having adjustable connection with the carriage, substantially as set forth.

11. In a paper-feeding machine, the combination of a support for a pile of sheets, with a buckler-supporting frame, suitable sheet-buckling mechanism including a reciprocating carriage operating in the frame and a buckling-finger mounted upon the carriage, a rotary crank, a slot formed in the buckler-carriage, a stud adjustably mounted in said slot, and a pitman journaled at its opposite ends to the crank and said adjustable stud, substantially as set forth.

12. In a paper-feeding machine, the combination of a support for a pile of sheets, with a buckler-supporting frame, a buckler-carriage mounted in said frame, and carrying a buckling-finger, means for operating said carriage, a bracket-arm projecting from the carriage, and a spring device engaging the buckling-finger, and guided in said bracket-arm, substantially as set forth.

13. In a paper-feeding machine, the combination of a support for a pile of sheets, with

a buckler-supporting frame, a buckler-carriage mounted in said frame, and carrying a buckling-finger, means for operating said carriage, a bracket-arm projecting from the carriage, a rod journaled to the buckling-finger and passing loosely through a guide-opening in said bracket-arm, and a spring confined

upon said rod between said bracket-arm and a collar upon the rod, substantially as set forth.

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