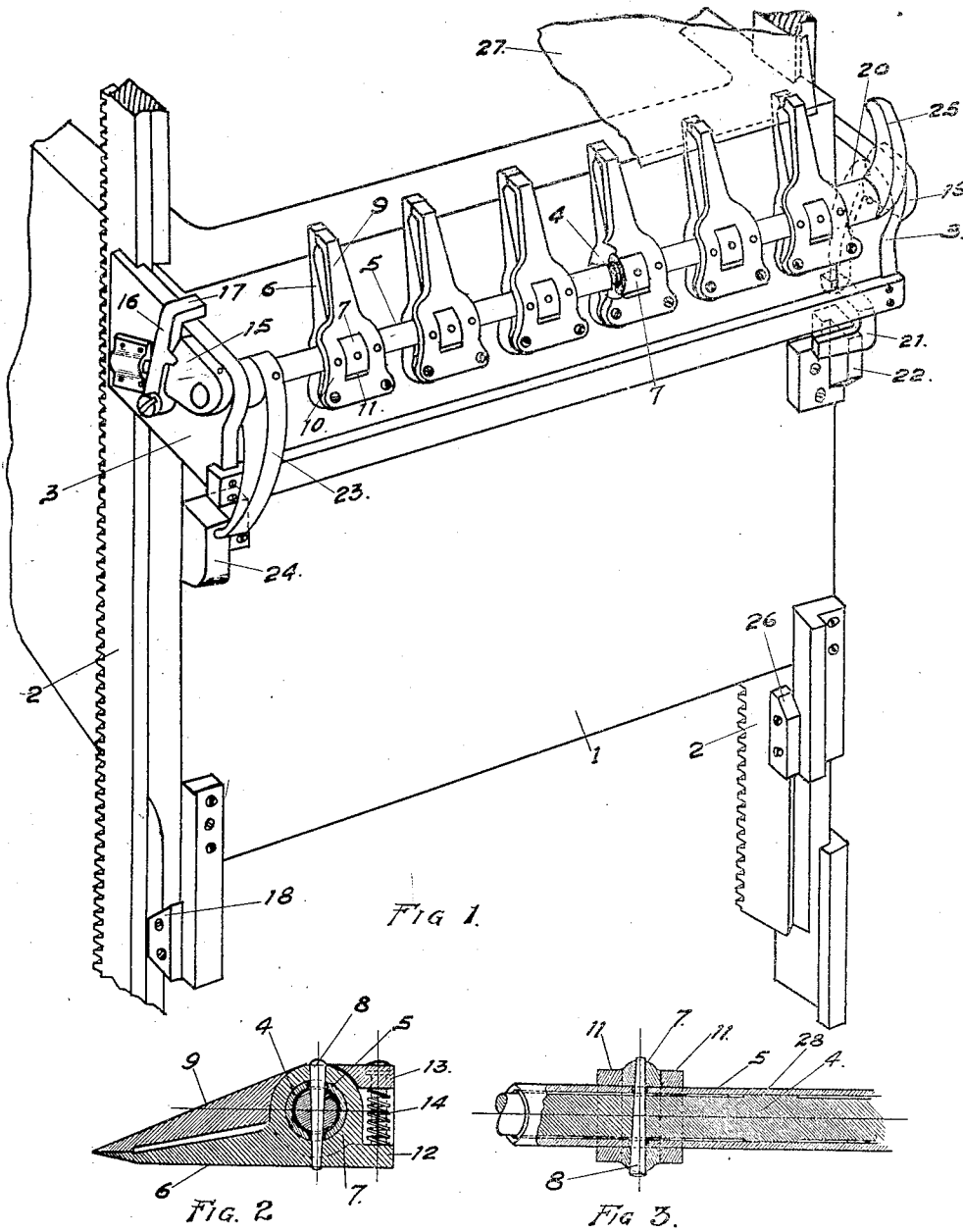


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GRIPPING DEVICE FOR SHEETS OF PAPER AND THE LIKE.  
APPLICATION FILED OCT. 20, 1919.

1,337,231.

Patented Apr. 20, 1920.



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# UNITED STATES PATENT OFFICE.

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GRIPPING DEVICE FOR SHEETS OF PAPER AND THE LIKE.

1,337,231.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, EMERSON P. JENNINGS, a citizen of the United States, residing at Lehighton, in the county of Carbon and State of Pennsylvania, have invented certain new and useful Improvements in Gripping Devices for Sheets of Paper and the like, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to gripping devices for sheets of paper and the like, and is designed more particularly for use as a part of a sheet feeding mechanism for printing presses.

The object of the invention is to provide a device of this kind which will be very simple in its construction and operation, and in which the movements of the gripping members, or jaws, can be easily and positively controlled.

To this end, it is a further object of the invention to provide means for mounting a plurality of pairs of jaws on a single shaft in such a manner that the jaws of each pair will be movable relatively one to the other, and in which the movements of the jaws may be controlled from the ends of the shaft.

Other objects of the invention will appear as the mechanism is described in detail.

In the accompanying drawings, Figure 1 is a perspective view of a mechanism embodying my invention; Fig. 2 is a transverse, sectional view taken centrally through one pair of jaws; and Fig. 3 is a longitudinal sectional view of a portion of the device.

In these drawings I have illustrated one embodiment of the invention and have shown the same as forming a part of a sheet feeding mechanism similar to that shown and described in the application for patent filed by me March 30, 1916, Serial No. 87725; but it will be understood that the particular embodiment here shown has been chosen for the purposes of illustration only, and that the gripping device itself may take various forms, and may be used in connection with mechanisms of various kinds.

As here shown, the gripping device constitutes the conveying device for the sheet feeding mechanism, and is adapted to move the sheet into printing position on the face of the platen 1. The gripping device may be mounted in any suitable manner for movement across the face of the platen, and

as shown in said application, it is carried by rack bars 2, mounted for vertical movement at the respective edges of the platen. Carried by these rack bars are supporting brackets 3, in which are journaled a shaft 4, which forms the support for the gripping members or jaws. Rotatably mounted upon this shaft is a sleeve, or outer shaft, 5, which extends for approximately the full length of the shaft between the supporting brackets 3, and is preferably formed in a single piece. Carried by the shaft 4, and preferably mounted upon the sleeve 5 are a plurality of pairs of jaws which are movable relatively one to the other. One jaw of each pair, in the present instance the inner jaw, 6, that is, the one adjacent to the platen, is rigidly secured to the shaft for movement therewith relatively to the sleeve. The connection between the jaw and the shaft may be effected in any suitable manner, but as here shown, the jaw has a bearing, or hub 7, which is rotatably mounted upon the sleeve, and which is secured to the shaft by means of a pin 8, extending through the hub 7, the sleeve 5 and the shaft, the sleeve being provided with openings through which the pin passes, and which are of sufficient size to permit the pin and, consequently, the shaft and the jaw, to move relatively to the sleeve. The other, or outer jaw, 9, is rigidly secured to the sleeve 5, and as here shown, has a hub portion 10 fitting about one side of the sleeve and provided with a central opening 11, to receive the hub 7 of the inner jaw. Each jaw is provided with a part projecting beyond the sleeve on that side thereof opposite the gripping faces of the jaws, as shown at 12 and 13, and springs 14 are interposed between the parts 12 and 13 of the jaws, and tend to move the gripping faces thereof into contact one with the other.

Means are provided for moving the jaws relatively one to the other and relatively to the platen as the device, as a whole, travels across the face of the platen. This means may be of any suitable character, and I have illustrated the same controlling means that are shown in the above mentioned application. Connected with the shaft 4, at one end thereof, is a locking plate 15, which cooperates with a trip arm 16 to lock the shaft in an adjusted position, and which is provided with a part 17, arranged to engage a trip block 18. At the opposite end of the device the sleeve 5 is provided with a similar

locking plate, as shown at 19, with which co-operates a trip arm 20, having a portion 21 adapted to engage a trip block 22. Secured to the shaft is a trip arm 23 arranged to engage a trip block 24, and connected with the sleeve is a trip arm 25 arranged to engage a trip block 26. With the parts in the positions shown in Fig. 1, the gripping device is at the upper limit of its movement, and the jaws have just closed upon a sheet of paper, as shown at 27. The next movement of the racks 2 is a downward movement, and the gripping devices move downwardly across the face of the platen to carry the sheet into its proper position on the face of the platen. As the device approaches the lower limit of its movement, the trip arm 25 engages the trip block 26 and rocks the sleeve to move the outer jaws away from the inner jaws, and thus release the sheet. The device, as a whole, continues its downward movement to clear the lower edge of the platen, and as it reaches the lower limit of its movement, the trip arm 16 of the part 17 engages the trip arm 18 and releases the locking plate 15, thereby permitting the springs 14 to move the inner jaws away from the platen and into engagement with the outer jaws. The jaws are thus so positioned with relation to the platen that they may be moved upwardly out of contact with the platen. As the jaws approach the sheet, the trip arm 23 engages the block 24 and moves the inner jaws away from the outer jaws and toward the platen. The trip arm, springing into engagement with the locking plate 15, retains these jaws in this position, and the further upward movement of the device causes the jaws to embrace the edge of the sheet. Immediately after the jaws have embraced the sheet, the trip arm 21 engages the trip block 22 and releases the locking plate 19, thereby permitting the outer jaws to be moved by the springs 14 toward the inner jaws, and thus cause the sheet to be gripped between the jaws. The device, as a whole, then begins its downward movement, and the cycle of operation just described is repeated.

The operation of the device can be readily understood from the foregoing description and it will be apparent that I have provided a gripping device of this kind which is exceedingly simple in its construction, and in which the movements of the jaws are very easily and very positively accomplished in perfectly timed relation to the movement of the device as a whole relatively to the platen. The manner of mounting the jaws is not only such as to permit of the relative movements thereof, but is such that the jaws themselves are of a very strong, durable character, and will not be easily disarranged or broken, and inasmuch as each of the jaws is rigidly secured to its actuating member,

that is, the shaft and the sleeve, respectively, they are moved simultaneously with relation to the sheet and to the platen. By forming the sleeve 5 as a unitary structure, on which the jaws are mounted, I am able to eliminate practically all torque. In order to reduce the friction between the sleeve and the shaft to a minimum, I have shown the shaft as of a diameter less than the internal diameter of the sleeve for the greater portion of its length, and have provided it at intervals with enlarged portions 28, which have bearing contact with the sleeve. In this manner, the two parts are held in perfect alinement, but the frictional contact is limited to the area of the bearing portions 28 of the shaft.

While I have shown and described one embodiment of my invention, I wish it to be understood that I do not desire to be limited to the details thereof, as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A gripping device comprising a shaft, a sleeve rotatably mounted on said shaft, a jaw mounted on said sleeve for rotatory movement relatively thereto and connected with said shaft for rotatory movement therewith, and a second jaw mounted on said sleeve for rotatory movement therewith relatively to said shaft.

2. A gripping device comprising a shaft, a sleeve rotatably mounted on said shaft, a jaw mounted on said sleeve for rotatory movement relatively thereto and connected with said shaft for rotatory movement therewith, said sleeve having an opening through which the connecting means for said jaw and said shaft extends, and in which said connecting means may move relatively to said sleeve, and a second jaw mounted on said sleeve for rotatory movement therewith relatively to said shaft.

3. A gripping device comprising a shaft, a sleeve rotatably mounted on said shaft and having an opening therein, a jaw having a hub portion rotatably mounted on said sleeve, means extending through the opening in said sleeve and movable therein to connect said hub with said shaft and a second jaw rigidly secured to said sleeve on opposite sides of said hub.

4. A gripping device comprising a shaft, a sleeve rotatably mounted on said shaft, a pair of jaws mounted on said sleeve, one of said jaws being pinned to said shaft, said sleeve having openings through which said pin extends, the openings being larger than the pin, to permit the pin to move relatively thereto, and the other jaw being secured to said sleeve for movement relatively to said shaft, and means for actuating said shaft and said sleeve.

5. A gripping device comprising a shaft, a sleeve rotatably mounted on said shaft, a pair of jaws mounted on said sleeve, one of said jaws being connected with said shaft for movement relatively to said sleeve, and the other jaw being secured to said sleeve for movement relatively to said shaft, said jaws having parts extending beyond said sleeve, springs arranged between said parts to move said jaws one toward the other, and means for actuating said shaft and said sleeve.

6. A gripping device comprising a shaft, a sleeve rotatably mounted on said shaft, a jaw mounted on said sleeve for rotatory movement relatively thereto and connected with said shaft for rotatory movement therewith, a second jaw mounted on said sleeve for rotatory movement therewith relatively to said shaft, and a spring acting directly on said jaws to move them one toward the other.

7. A gripping device comprising a shaft, a sleeve rotatably mounted on said shaft, a jaw mounted on said sleeve for rotatory

movement relatively thereto and connected with said shaft for rotatory movement therewith, a second jaw mounted on said sleeve for rotatory movement therewith relatively to said shaft, a spring acting directly on said jaws to move them one toward the other, and means acting on said shaft and said sleeve to operate said jaws.

8. A gripping device comprising a shaft and sleeve rotatably mounted on said shaft, said sleeve being of an internal diameter greater than the diameter of said shaft, and one of said parts having circumferential bearing portions arranged at intervals to engage the other part, a plurality of pairs of jaws mounted on said sleeve, one jaw of each pair being connected with said shaft for movement relatively to said sleeve, and the other jaw of each pair being secured to said sleeve for movement relatively to said shaft, and means for actuating said shaft and said sleeve.

In testimony whereof I affix my signature hereto.

EMERSON P. JENNINGS.