April 12, 1932. G. SPIESS 1,853,941

DEVICE FOR COUPLING A PRINTING PRESS WITH A SHEET FEEDING DEVICE

Filed Nov. 22, 1930 2 Sheets-Sheet 1

Fig.1

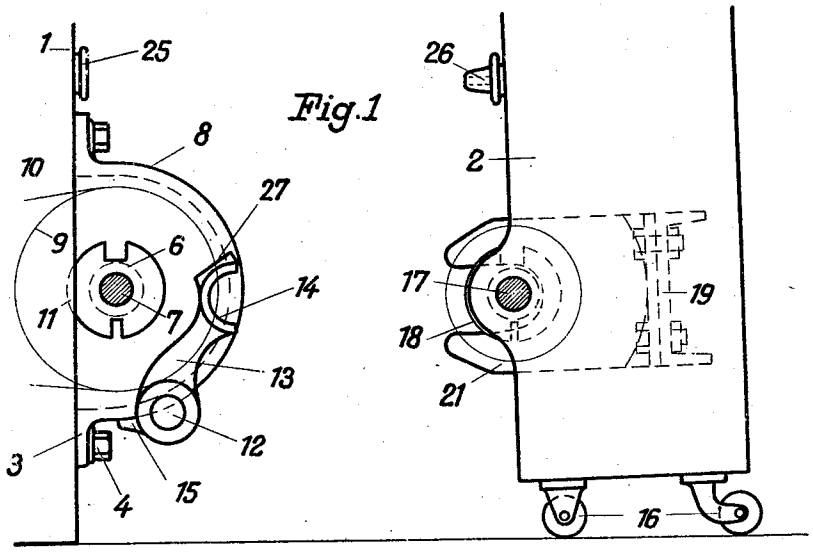


Fig.2

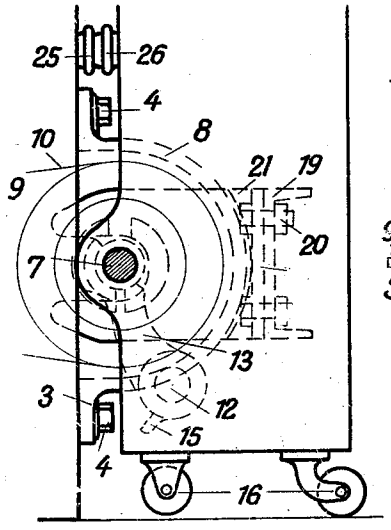
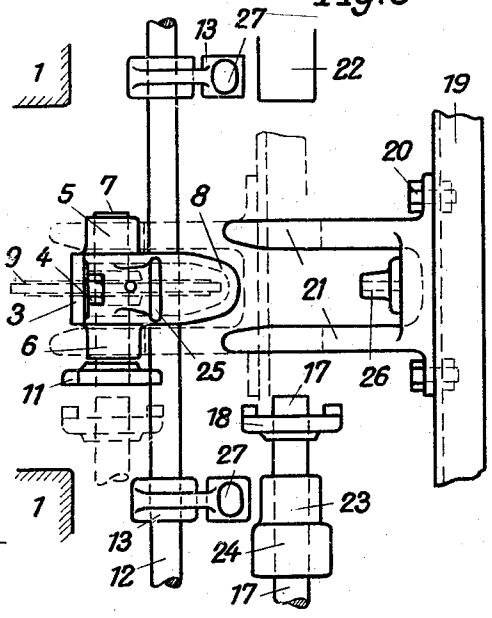


Fig.3



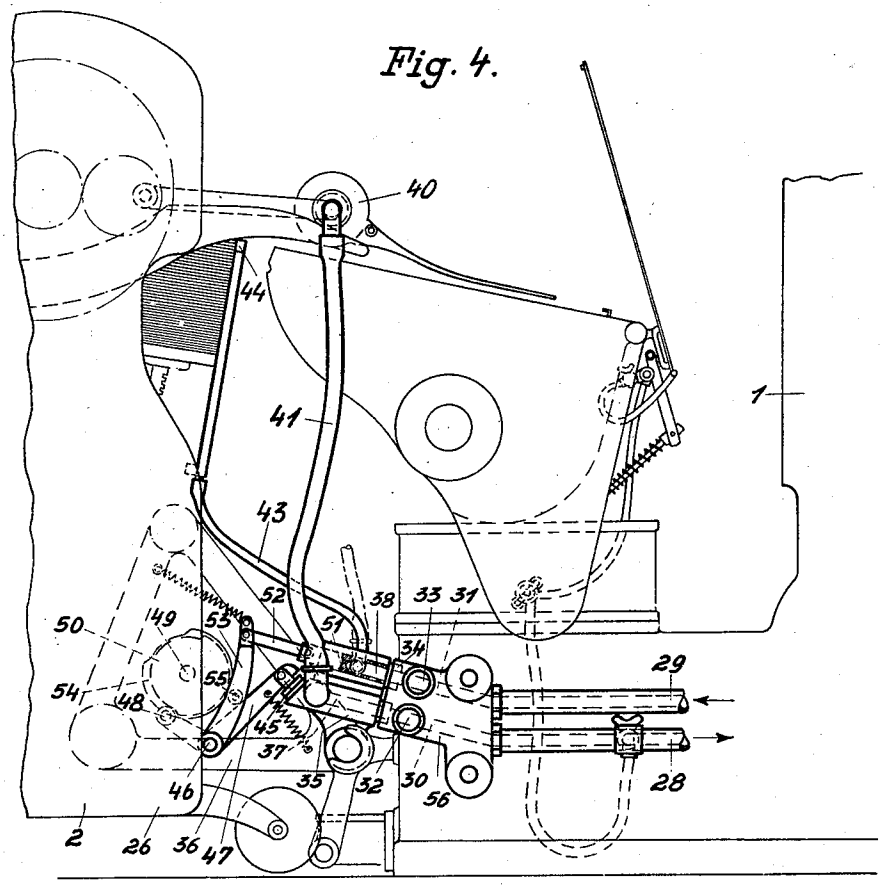
Inventor:
Georg Spieß.
By S. Sonal
Attorney

April 12, 1932. G. SPIESS 1,853,941

DEVICE FOR COUPLING A PRINTING PRESS WITH A SHEET FEEDING DEVICE

Filed Nov. 22, 1930 2 Sheets-Sheet 2

Fig. 4.



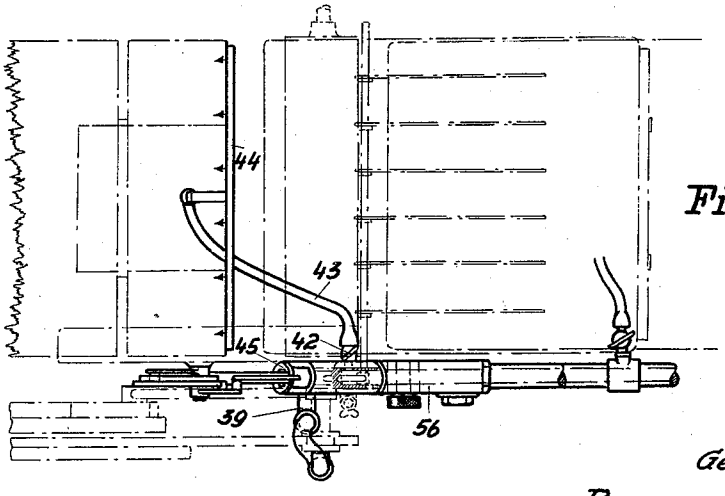


Fig. 5.

Inventor:
Georg Spieß.
By
Attorney

Patented Apr. 12, 1932 1,853,941

UNITED STATES PATENT OFFICE

GEORG SPIESS, OF LEIPZIG, GERMANY

DEVICE FOR COUPLING A PRINTING PRESS WITH A SHEET FEEDING DEVICE

Application filed November 22, 1930, Serial No. 497,504, and in Germany May 5, 1928.

The present invention relates to a device for use with printing presses for coupling a press and its drive with a transportable sheet feeding device by means of coupling members which are arranged on the press and on the feeding device and engage with one another during the coupling operation.

The principal object of the invention is to provide means whereby, when the feeding device is brought up to the press, the coupling members which are adapted to engage with one another automatically guide and adjust the sheet feeding device and raise the latter by turning it around its rear wheels into such a position that the coupling members for the drive of the press and the feeding device are located opposite to one another in the position of readiness for effecting the coupling operation. For this purpose swinging lugs or arms carrying bearing members are arranged on the press, which lugs guide the coupling members of the feeding device and raise it into the coupling position, the said lugs resting in the coupling position against stops provided in the framework of the press. In addition to this, air supply nozzles and electrical contacts adapted to engage with one another in the coupled position of the device are provided on the press and on the feeding device, so that when the feeding device and the press are brought together the various conduits and electrical connections of the feeding device and of the press are automatically connected with one another. By means of the invention the result is attained that by merely bringing the feeding device up to the press the driving gear, the supply conduits and the electrical connections of the feeding device and the press are coupled with one another in readiness for working operations and that likewise by merely moving the feeding device away from the press again the driving gear, the conduits and the connections are uncoupled from one another.

Two constructional forms of the device according to the invention are illustrated by way of example in the accompanying drawings in which the press and the feeding device have been shown broken off, and all details of the apparatus which are unnecessary for the comprehension of the invention have been omitted.

In the drawings, Figs. 1–3 illustrate the one constructional form.

Fig. 1 is a side elevation of the front part of a printing press and the rear part of a sheet feeding device before they have been coupled with one another,

Fig. 2 is a similar elevation of the press and of the feeding device in the coupled position, and

Fig. 3 is a plan of the device showing the means for laterally guiding the press and the feeding device in regard to one another during the coupling operation.

Figs. 4 and 5 show a modification of the device for coupling the air conduits between the press and the feeding device,

Fig. 4 being an elevation, and

Fig. 5 a plan of the device.

Referring to Figures 1, 2, 3, the reference numeral 1 denotes the framework of a printing press, of which only the front part is shown, and the reference numeral 2 denotes the framework of a transportable sheet feeding device. On the front of the framework 1 of the press a bearing bracket 3 is fixed by means of screws, which bearing bracket is provided with two bearings 5, 6 in which a shaft 7 is journalled. The bearing bracket is so constructed that the part located between the bearings 5, 6 forms a guard 8 for a chain wheel 9 mounted on the shaft 7, the said chain wheel being driven from the main shaft of the press by means of a chain 10. On one end of the shaft 7 a coupling member 11 is rigidly fixed.

The bearing bracket 3 is provided with an attachment in the form of an eyelet in which an axle 12 is fixed on which, on both sides of the said bearing bracket, lugs 13 are mounted, the free ends of which are shaped so as to constitute bearing members 14. Previous to the operation of coupling the feeding device with the press, the said lugs 13 are brought into the position shown in Fig. 1, in which they are held firmly in position by means of a stop 15 resting against the bearing bracket 3. In the framework 2 of the feeding device, which is mounted on rollers

16 so as to be transportable, a stub shaft 17 is journalled, which, in the coupled position of the apparatus, is co-axial with the shaft 7 and is provided with a displaceable coupling member 18 corresponding to the coupling member 11 provided on the shaft 7. In the framework of the feeding device a transverse member 19 is also provided to which a forked guide member 21 is fixed by means of screw bolts 20, the space between the arms of the fork of the said member 21 serving for engagement with the guard 8 which is likewise constructed so as to constitute a guide member. For this purpose the arms of the forked guide member 21 are bevelled on their inner sides at the ends and the guard 8 is similarly bevelled on its outer sides. The arms of the forked guide member 21 are also provided with forks located perpendicularly to the horizontal fork of the said member. During the coupling operation the bearings 5, 6 provided on the bearing bracket 3 fixed to the framework of the press engages with the forks provided on the aforesaid arms.

On the other side of the guide member 21, coaxial with the shaft 17, a rod or pin 22 cooperating with the bearing member 14 is fixed to the framework of the feeding device, A journal 24 for the shaft 17 is also provided which is furnished with a prolongation 23 likewise adapted to co-operate with one of the bearing members 14. The pin 22 and the prolongation 23 are arranged on the framework 2 of the feeding device at such a height that, when the feeding device which is laterally guided with regard to the press on the one hand by means of the forked member 21 and on the other hand by means of the guard 8, is brought up to the press, the said pin and prolongation engage with the bearing members 14 arranged on the lugs 13 which are in the initial position illustrated in Fig. 1. When the feeding device is brought up to the press the lugs 13 are turned backwards and thereby raise thefront part of the framework of the feeding device until such time as they have passed through the vertical position after which they lower the front of the feeding device again, the guide member 21 being meanwhile moved downwards over the guard and the position of the feeding device with regard to the press being automatically adjusted laterally. At the same time the forks at the ends of the arms of the guide member 21 engage with the bearings 5, 6 of the bearing bracket 3. The turning movement of the lugs 13 ceases when the stops 27 provided at their upper ends come to rest on the front of the framework 1. In this position the pin 22 and the shaft 17 of the feeding device are located co-axially with the shaft 7 of the press and the coupling members 11, 18 are located opposite to one another in the position requisite for effecting the coupling operation. In order to carry out the coupling operation the coupling member 18 is now displaced so as to bring it into engagement with the fixed coupling member 11. In order to ensure that the apparatus should be in the correct relative positions for effecting the coupling, i. e. that the devices appertaining to the press and the platen should be in the necessary relative positions for the working operations, the coupling members 11, 18 are so constructed that the coupling operation can only be effected in one definite position of the said members with regard to one another. In the constructional example illustrated the claws and recesses of the coupling members have, for this purpose, been made of different breadths.

The press is provided at any suitable place with a funnel-like socket 25 at the end of a suction conduit, and a packed conical nozzle 26 connected to a suction pipe and corresponding to the aforesaid socket is provided on the framework of the feeding device. During the cooling operation the nozzle passes into the socket 25, as a consequence of which the air conduit of the press is simultaneously connected with the air conduit of the feeding device during the said coupling operation.

In similar manner electrical connection can be established between the feeding device and the press automatically by means of suitable contacts.

The lugs 13 may, of course, be arranged on the sheet feeding device instead of on the press in such manner that when the feeding device is brought up to the press they rest on the framework of the latter. It will also be understood that the lateral guiding devices and the devices for coupling the air conduits may also be similarly reversed.

Instead of the lugs 13, inclined guide tracks provided at the end with a stop member may also be provided.

In the modification shown in Figs. 4 and 5, a coupling member 56 is arranged laterally on the framework 1 of the press, the said coupling member having a suction conduit 28 and a pressure air conduit 29 connected to it. The coupling member 56 is provided with a corresponding suction air conduit 30 and a pressure air conduit 31. In each of these conduits a closing and throttling member 32 and 33 respectively are arranged. The coupling sockets of the conduits 30, 31 are each provided with packing 34. On the framework of the sheet feeding device a coupling member 35 carried on a support 36 is provided, the said coupling member being provided with a suction conduit 37 and a pressure air conduit 38. The ends of both of these conduits are cut off flush or are likewise provided with packing members adapted to rest flush up against the packing members provided on the coupling member 56

when the feeding device is brought up into the coupling position. The suction conduit 37 is provided laterally with a branch connection 39 which is connected to a suction feeding roller 40 by means of a pipe 41, and the pressure air conduit 38 is provided laterally with a branch connection 42 for a pipe 43 which is connected to blast nozzles arranged on the sheet pile stops 44.

The suction conduit 37 is further provided with an opening leading into the open air, which can be opened or closed by means of a flap 45 for the purpose of putting the suction in and out of action. The flap 45 is mounted on the one arm of a bell crank lever 47 which is spring controlled and is pivoted at 46, the other arm of said bell crank lever 47 being provided with a roller 48 and being actuated by a cam disc 50 mounted on a shaft 49.

In the pressure air conduit 38 a slide member 51, adapted to close and open a branch connection 42, is guided, the said slide member being pivotally connected by means of a rod 52 with a swinging arm 53 journalled at 46. The swinging arm 53 is provided with a lateral roller 55 which runs on a cam disc 54 mounted on the shaft 49, and which is drawn up against the periphery of the said cam disc by means of a spring.

I claim:

1. In combination: a stationary printing press; a separate transportable sheet feeding device which can be connected to said press to co-operate therewith and which is mounted on wheels running freely on the ground; a driving shaft upon said printing press; a driven shaft upon said sheet feeding device; a clutch for coupling said driving shaft to said driven shaft comprising a clutch portion on one shaft and a clutch portion on the other shaft; means for automatically lifting the said sheet feeding device during its movement towards the stationary press; means for guiding the sheet feeding device horizontally relatively to the stationary press, and means for guiding the sheet feeding device vertically relatively to the stationary press during the lifting operation, whereby the sheet feeding device is registered both horizontally and vertically relatively to the stationary press and the clutch members are brought into alignment, substantially as described.

2. The combination of: a stationary printing press; a separate transportable sheet feeding device which can be connected to said press to co-operate therewith and which is mounted on wheels running freely on the ground; co-operating devices on said stationary printing press and said transportable sheet feeding device; and means operable by the movement of the sheet feeding device towards the stationary press for bringing into alignment the said co-operating devices, said aligning means comprising means for automatically lifting the sheet feeding device upon its rear wheels during its movement towards the stationary press, and means for guiding the sheet feeding device both laterally and vertically during said movement and the lifting movement, substantially as described.

3. In combination: a stationary printing press; a transportable sheet feeding device mounted on wheels; means for guiding said sheet feeding device both laterally and vertically relatively to the said stationary printing press during its movement towards the press; and means for lifting the sheet feeding device during a part of its movement towards the stationary printing press and slightly lowering the said sheet feeding device at the end of its movement towards the stationary printing press, substantially as and for the purpose described.

4. In combination: a stationary printing press; a separate transportable sheet feeding device adapted to be connected to said press to co-operate therewith and mounted on wheels running freely on the ground; a clutch member on said stationary printing press; a clutch member on said transportable sheet feeding device; and means for bringing the said two clutch members into alignment when the sheet feeding device has been moved towards the stationary printing press, said means comprising means for guiding the said sheet feeding device both horizontally and vertically during its movement towards the press and means for raising the said sheet feeding device about its rear wheels whilst it is vertically guided, whereby alignment of the clutch part takes place in a raised position of the sheet feeding device, substantially as described.

5. In combination: a stationary printing press; a transportable sheet feeding device mounted on wheels; a clutch member on said stationary printing press; a clutch member on said transportable sheet feeding device; and means for bringing into alignment the said two clutch members during the movement of the said transportable sheet feeding device towards the stationary press, said aligning means comprising in combination: lugs pivotally mounted upon the said stationary printing press; members upon the transportable sheet feeding device adapted to be gripped by said lugs, said lugs being so arranged that they swing upwards during the movement of the sheet feeding device; and means for horizontally and vertically guiding the sheet feeding device relatively to the stationary press, said means comprising horizontal and vertical fork members upon the sheet feeding device and a member upon the stationary press, engaged by said horizontal and vertical fork members, substantially as described.

6. In combination: a stationary printing press; a transportable sheet feeding device mounted on wheels; means for guiding said transportable sheet feeding device both horizontally and vertically relatively to the stationary printing press, said means comprising interengaging members upon the said stationary printing press and said transportable sheet feeding device; means for first automatically lifting the said sheet feeding device during its movement towards the stationary printing press and then slightly lowering the said sheet feeding device; and means upon the stationary press for limiting the movement of the said lifting means, substantially as described.

7. In combination: a stationary printing press; a transportable sheet feeding device mounted on wheels; a clutch member on said stationary printing press; a co-operating clutch member on said sheet feeding device; and means operable by the movement of the sheet feeding device towards the stationary press for bringing into alignment the said two clutch members; said means comprising means for guiding the said movable sheet feeding device both horizontally and vertically during its movement towards the stationary printing press; and means for raising the said sheet feeding device upon its rear wheels, said raising means comprising rocking lugs pivotally mounted upon said stationary press and members upon said sheet feeding device adapted to engage said rocking lugs, said rocking lugs being at the time of the engagement slightly inclined forward, and being at the end of the movement slightly inclined backward and supported in the latter position, and stops upon the stationary press for supporting the lugs in the latter position, substantially as described.

8. The combination of: a stationary printing press; a transportable sheet feeding device mounted on wheels; co-operating devices on said stationary printing press and said transportable sheet feeding device, said co-operating devices comprising a driving shaft on the stationary press, a clutch member on said driving shaft, a driven shaft on the sheet feeding device, a clutch member on said driven shaft, an air supply member on the stationary press, a corresponding air receiving nozzle on the sheet feeding device; and means operable by the movement of the sheet feeding device towards the stationary press for bringing into alignment the said co-operating devices, said aligning means comprising means for automatically lifting the sheet feeding device upon its rear wheels during its movement towards the stationary press, and means for guiding the sheet feeding device both laterally and vertically during said movement, substantially as described.

9. The combination of: a stationary printing press; a transportable sheet feeding device mounted on wheels; co-operating devices on said stationary printing press and said transportable sheet feeding device comprising a driving shaft upon said printing press, a clutch member upon said driving shaft, a driven shaft upon said sheet feeding device, a clutch member on said driven shaft, contact connection means for connecting corresponding suction and pressure passages provided on the stationary press and on the transportable sheet feeding device; and means operable by the movement of the sheet feeding device towards the stationary press for bringing into alignment the said co-operating devices, said aligning means comprising means for automatically lifting the sheet feeding device upon its rear wheels during its movement towards the stationary press, and means for guiding the sheet feeding device both laterally and vertically during said movement, substantially as described.

10. In combination: a stationary printing press; a transportable sheet feeding device mounted on wheels; co-operating devices on said stationary printing press and said transportable sheet feeding device comprising: a driving shaft upon said printing press, a clutch member on said driving shaft, a driven shaft upon said sheet feeding device, a clutch member on said driven shaft, an air suction port on said press, an air discharge port on said press, a packing ring in said air suction port, a packing ring in said air discharge port, a corresponding air suction port on the sheet feeding device, a corresponding air discharge port on said sheet feeding device, manually operable means for controlling the passage of the air through the air suction port on the press, manually operable means for controlling the passage of the air through the air discharge port on the press, mechanically operated valve means for controlling the passage of the air from the air discharge port upon the sheet feeding device and mechanically operated valve means for controlling the escape of the air from the air suction port on the sheet feeding device; and aligning means operable by the movement of the sheet feeding device towards the stationary press for bringing into alignment the said co-operating devices, said aligning means comprising means for automatically lifting the sheet feeding device upon its rear wheels during its movement towards the stationary press, and means for guiding the sheet feeding device both horizontally and vertically during said movement, substantially as described.

11. In combination: a stationary printing press; a transportable sheet feeding device mounted on wheels; co-operating devices on said stationary printing press and said transportable sheet feeding device comprising: a driving shaft upon said printing press, a clutch member upon said driving shaft, a

driven shaft upon said sheet feeding device, a clutch member on said driven shaft, an air port on said printing press, a corresponding air port on said sheet feeding device, said air ports having end faces adapted to be brought into contact, packing means for producing a tight joint between the said end faces by the mere contact of said end faces; and aligning means operable by the movement of the sheet feeding device towards the stationary press for bringing into alignment the said co-operating devices, said aligning means comprising means for automatically lifting the sheet feeding device upon its rear wheels during its movement towards the stationary press, and means for guiding the sheet feeding device both horizontally and vertically during said movement, substantially as described.

12. In combination: a stationary printing press; a separate transportable sheet feeding device adapted to be connected to said press to co-operate therewith and mounted on front and rear wheels running freely on the ground, the rear wheels being vertically adjustable; co-operating devices on said stationary printing press and said transportable sheet feeding device, the devices on the printing press being located at a slightly higher level than the co-operating devices on the transportable sheet feeding device; and means operable by the movement of the sheet feeding device towards the stationary press for bringing into alignment the said co-operating devices, said aligning means comprising means for automatically lifting the sheet feeding device upon its rear wheels during its movement towards the stationary press, and means for guiding the sheet feeding device both horizontally and vertically during said movement and the lifting movement, substantially as described.

13. In combination: a stationary printing press; a separate transportable sheet feeding device adapted to be connected to said press to co-operate therewith and mounted on front and on rear wheels running freely on the ground; co-operating devices on said stationary printing press and said transportable sheet feeding device, the devices on the stationary printing press being located at a higher level than the corresponding devices upon the transportable sheet feeding device; and aligning means operable by the movement of the sheet feeding device towards the stationary press for bringing into alignment the said co-operating devices, said aligning means comprising means for automatically lifting the sheet feeding device upon its rear wheels during its movement towards the stationary press, means upon the stationary printing press for supporting the lifted portion of the sheet feeding device, and means for guiding the sheet feeding device both horizontally and vertically during said movement and the lifting movement, substantially as described.

Signed at Leipzig, Germany, this eleventh day of November, 1930.

GEORG SPIESS.