Oct. 22, 1940. R. W. BANDY 2,219,124

PRESS PAPER ROLL CHUCK

Filed Feb. 18, 1939 2 Sheets-Sheet 1

Fig. 1.

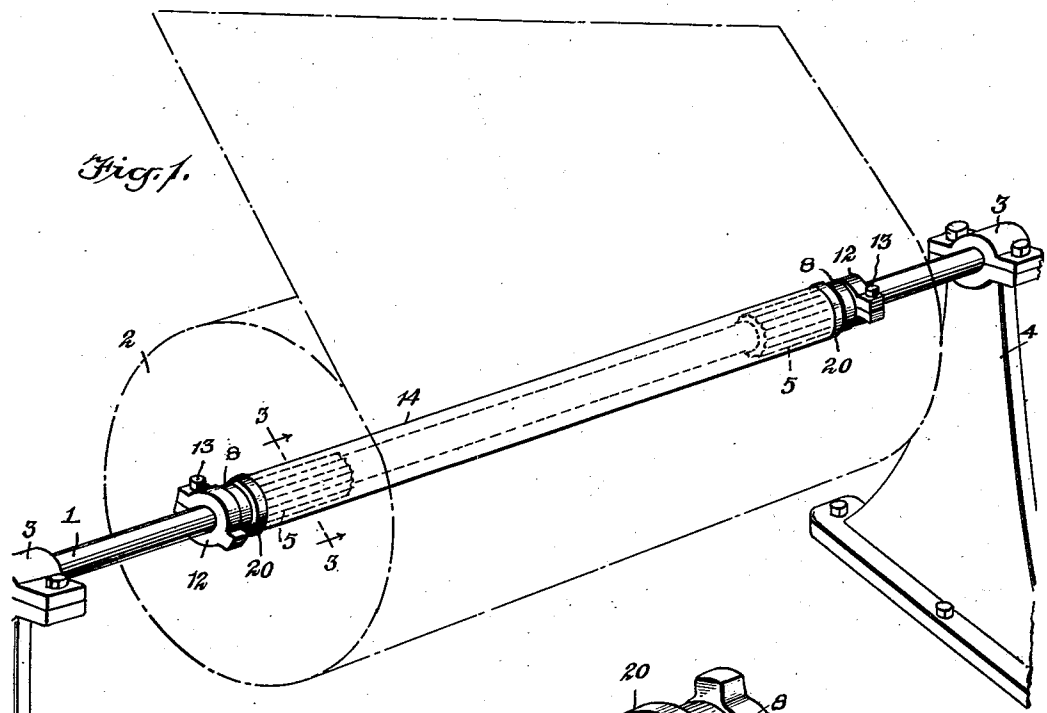


Fig. 2.

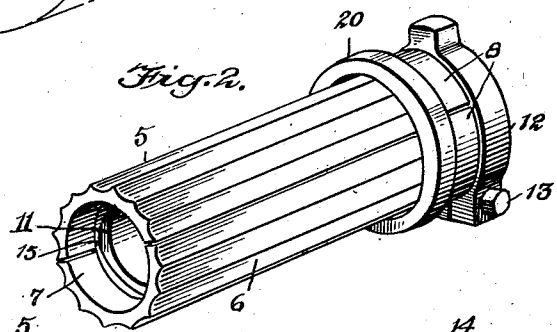


Fig. 3.

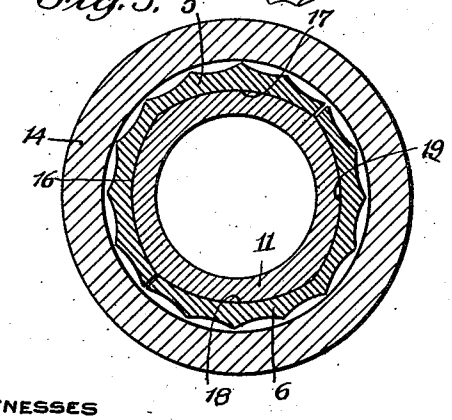
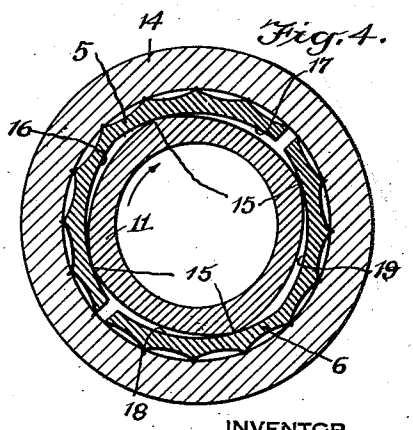


Fig. 4.



WITNESSES

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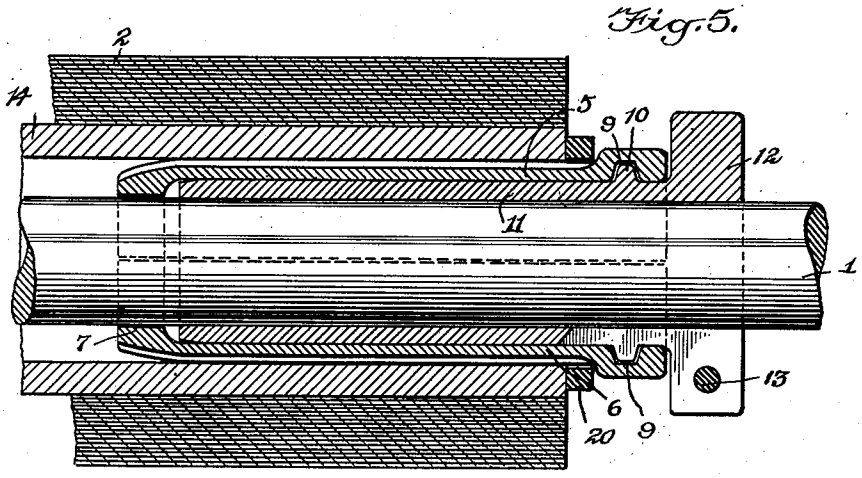
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Fig. 5.



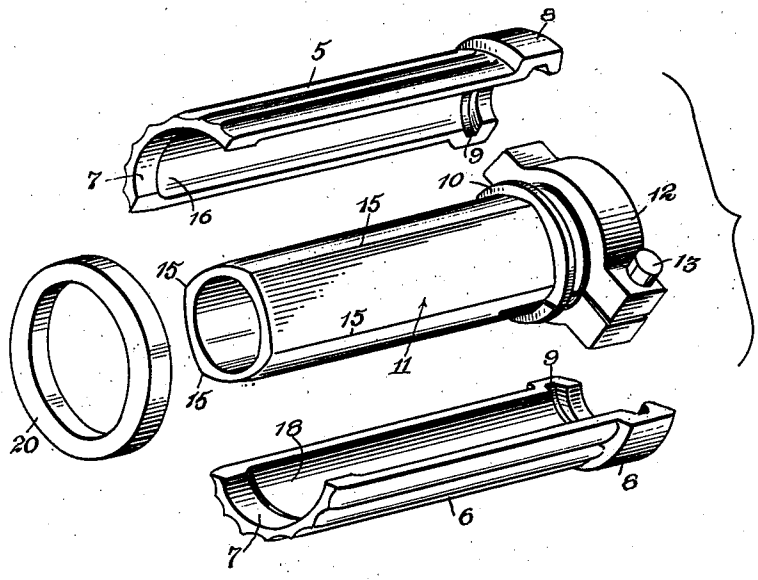
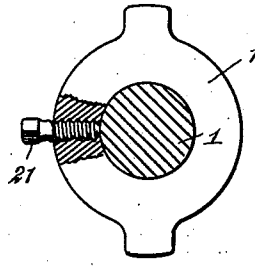


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE

2,219,124

PRESS PAPER ROLL CHUCK

Robert Watson Bandy, Fresno, Calif.

Application February 18, 1939, Serial No. 257,170

3 Claims. (Cl. 242—72)

This invention relates to an improved press paper roll chuck and has for an object to provide an improved construction over my prior Patent No. 1,597,568.

Another object of the invention is to provide a chuck of the character mentioned wherein the clamping members or leaves move radially into and out of clamping action.

An additional object is to provide a chuck for press paper rolls wherein a tubular cam member is provided with a plurality of cam heads for radially separating the clamping members surrounding the cam member and thereby providing for an elongated contact or friction surface.

A further object, more specifically, is to provide a chuck having means for clamping the same to a rod provided with a tubular cam structure and clamping leaves loosely mounted thereon, the parts being so arranged that when the leaves are held stationary and the cam is rotated for part of a revolution, the leaves will move radially into frictional engagement with the press paper roll for locking the same to the shaft.

In the accompanying drawings—

Fig. 1 is a perspective view showing a pair of standards, a roll-supporting shaft, and a pair of chucks for firmly connecting the press paper roll to the shaft;

Fig. 2 is a perspective view on an enlarged scale of one of the chucks shown in Fig. 1;

Fig. 3 is a sectional view through Fig. 1 approximately on the line 3—3, the shaft being eliminated;

Fig. 4 is a view similar to Fig. 3 but showing the leaves separated or moved into functioning position;

Fig. 5 is a longitudinal vertical sectional view through one of the chucks shown in Fig. 1 and part of the roll, said view illustrating how the parts are arranged immediately before the clamping leaves are caused to function;

Fig. 6 is a perspective view of the structure shown in Fig. 2 with various members spaced apart; and

Fig. 7 is a sectional view through the shaft shown in Fig. 5 and illustrating a modified form of means for clamping the chuck to the shaft.

Referring to the accompanying drawings by numerals, 1 indicates a shaft used for supporting a press paper roll 2. This shaft is supported on suitable journals 3 carried by respective standards 4.

Heretofore various clamps have been used including the clamp disclosed in my prior patent above mentioned. These clamps have been more or less successful particularly my prior clamp or chuck. However, during the last ten to twenty years the press rolls 2 have increased in size and diameter and, consequently, they require a stronger structure for securing them to a supporting shaft, as for instance shaft 1 illustrated in Fig. 1. In addition, instead of running off from twenty-five thousand to thirty thousand copies per hour, it is not unusual to run off fifty thousand copies of a newspaper per hour. This produces quite a momentum in rolls weighing two thousand pounds more or less.

In view of the above mentioned facts, the chuck embodying the invention has been provided with friction or clamping leaves 5 and 6 which are straight and which remain parallel to each other as they move radially outwardly. By reason of this construction any desired length of chuck could be provided and the clamping leaves 5 and 6 would clamp for their length.

In order to secure an efficient clamping or gripping action, the outer surface of the leaves 5 and 6 are fluted, as illustrated particularly in Figs. 2 to 4 inclusive. The leaves 5 and 6 are identical in construction and, as illustrated in Fig. 6, each leaf is provided with a thickened portion 7 and a hub portion 8. The hub portion 8 of each leaf is provided with a groove 9 so that when the parts are in functioning position these grooves may loosely fit over the bead 10. This bead is formed as a ring substantially A-shaped in cross section and integral with the cam 11, as shown in Fig. 5. The cam 11 is preferably, though not necessarily, formed integral with the head or collar 12. Various means may be provided for rigidly securing the collar 12 to the shaft 1, but as shown in Fig. 5 the collar 12 is split at one point and the split portion extends an appreciable distance into the cam 11. This permits the clamping bolt 13 to cause the collar to firmly pinch the shaft 1. Shaft 1 may be made of any suitable kind of metal but the clutch comprising the invention is preferably formed of carbon steel so that it will be amply strong to take care of the strain brought to bear thereon.

The paper rolls 2 used in printing presses are wound on a core 14 which may be cardboard, paper, metal or other suitable material and when the chuck is in position the leaves 5 and 6 will press against this core so that the roll is really locked to the shaft 1. By reason of this construction, when the shaft 1 is stopped suddenly for any reason, the roll 2 will also be stopped and there will be no loose waste paper to take

care of or any time lost when restarting the printing press.

From Figs. 5 and 6 it will be observed that the cam 11 is a tubular straight extension projecting from the collar 12 and that the same is provided with four cam heads 15 acting against the inner surface of the leaves 5 and 6. The inner surfaces of the leaves 5 and 6 are formed with arc-shaped portions so that when the cam 11 is rotated for part of a revolution, one or more cam heads will function to move the leaves outwardly from the position shown in Figs. 3 and 5 to the position shown in Fig. 4 wherein the leaves firmly grip the roll 2, or rather the core 14 thereof. As shown in Fig. 4, the corrugated edges penetrate only a short distance into the core 14, but in a full size device these edges project an appreciable distance into the core so as to grip the core firmly for the full length of the leaves.

In actual use the leaves have been made seven and one-half inches long for use in certain printing establishments in Fresno, California. It will be evident, however, that these leaves and associated parts could be made longer or even shorter, if desired, without departing from the spirit of the invention.

As shown in Fig. 5 the tubular cam 11 is cast integral with the collar 12 though it could be made separate and rigidly secured thereto without departing from the spirit of the invention. Also four cam heads 15 have been disclosed though, if desired, a less or even a greater number could be used.

The arc-shaped inner portions of the leaves 5 and 6 are formed to agree with the shape of the cam 11, as illustrated in Fig. 3. From this figure it will be observed that the leaf 5 is provided with arc-shaped surfaces 16 and 17, while the leaf 6 is provided with arc-shaped surfaces 18 and 19. If a less number of cams were used the interior surface of the leaves would be made accordingly, or if a greater number of cams were used a greater number of arc-shaped surfaces would be produced. By reason of this construction a partial rotary movement of the tubular cam 11 will produce an appreciable radial outward movement of the leaves so as to bring them into proper frictional engagement with the core 14.

Ordinarily when not in use the parts are arranged as shown in Fig. 2 with a loose ring 20 holding the parts in assembled relation. Ring 20 is also shown in Figs. 5 and 6 and functions only to hold the parts against disassemblage. This ring constantly holds the hub portion 8 in position over the bead or ring 10 while allowing the proper radial movement of all parts as the interior diameter of the ring 20 is ample to permit this action. In case it should be desired to remove one or both of the leaves, ring 20 would be slid to the left, as shown in Fig. 2, until entirely removed. When this is done the leaves can be easily lifted off as there is nothing to hold them in place.

As shown in Fig. 5, the collar 12 is split and is clamped firmly to the shaft 1. Other means for securing the collar in place could be used, as for instance a key or a set screw. In Fig. 7 the collar 12' is shown, which is not split but is provided with a set screw 21 of any desired type which acts to firmly and rigidly clamp the collar 12' to the shaft 1.

When the paper or roll is exhausted and it is desired to place another roll of paper on the shaft 1, the sheet of paper extending to the press is cut loose from the core and the shaft 1 is then removed from the bearings or paper roll brackets. Both chucks are then loosened from the core and one chuck removed from the shaft. This allows shaft 1 to be withdrawn from the core so as to replace another or new roll of paper on the shaft. The chuck that remains on the shaft is inserted in the new paper or roll and the other chuck is placed on the shaft and inserted in the new roll core, after which the replaced chuck is locked tightly on to the shaft 1. This makes the assembly of shaft, chucks and roll of paper complete ready for use. After this has been done, the roll of paper in this condition is supported by the usual standards or brackets. The end of the paper that was cut from the exhausted core is then spliced to the paper of the new roll and the press started. When the splice is through the press cylinders tension is applied to shaft 1 and the sheet of paper is drawn very tight, thus causing the chucks to lock tightly to the core of the new roll and shaft automatically. The greater the tension or shaft brake is applied the tighter the chucks hold to the core.

In case the rotation of shaft 1 should suddenly stop, the chucks would stop the roll 2 substantially as suddenly so that there would be no appreciable loose paper, whereby the printing press or other machine using the paper could be set in motion again whenever desired.

I claim:

1. An expansion chuck for press rolls comprising a collar formed with an integral tubular cam extending axially therefrom, said cam being provided with an annular radially outwardly extending ring on its exterior surface adjacent said collar, a pair of gripping leaves, each leaf having an interiorly positioned groove loosely accommodating said ring, and means for locking said collar in functioning position, said tubular cam acting to move said leaves bodily radially when functioning to grip a press roll.

2. A chuck for press rolls including a pair of leaves roughened on the outer surface and adapted to be pressed into the core of a press roll, each of said leaves having a head formed on the inner surface with an arc-shaped groove, a tubular cam for moving said leaves radially bodily for the full length, an exterior annular bead formed integral with said cam extending into the grooves of said leaves for keeping the leaves aligned without interfering with this radial movement, and means for clamping the cam in functioning position after said leaves have been moved radially.

3. The combination with a shaft, of a chuck for securing a press roll thereto, comprising a tubular cam formed adjacent one end with an exterior annular bead integral with the cam and a collar spaced from said annular bead, said cam with its bead and collar surrounding said shaft, said collar and part of said cam being slit at one point, a clamping screw for contracting the collar for causing the same to grip said shaft, said cam having a plurality of cam heads extending longitudinally thereof, and a plurality of friction leaves, each leaf having a head formed with an arc-shaped inner groove loosely fitting over said bead, said cam heads being positioned so that when said cam is partly rotated the cam heads will simultaneously move the leaves bodily radially away from said shaft for causing the leaves to grip said press roll.

ROBERT WATSON BANDY.