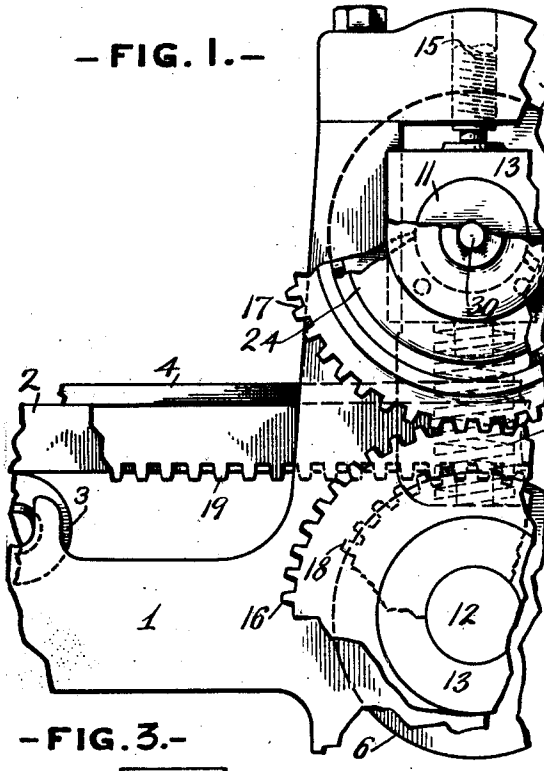
Feb. 7, 1928. 1,658,429

A. H. CRUSE

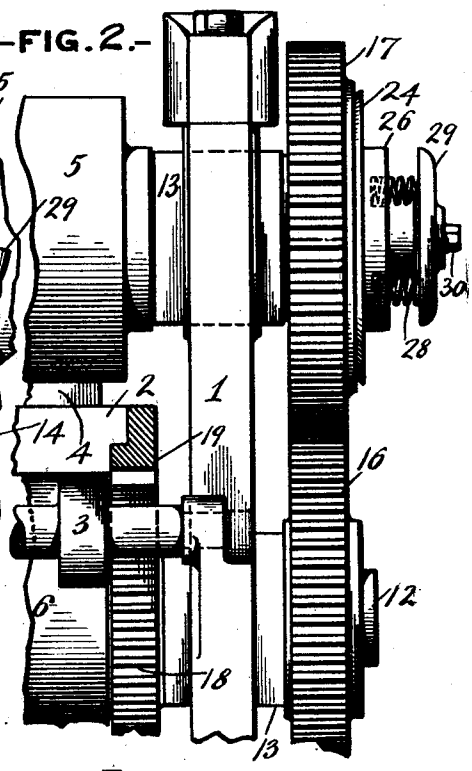
DRIVING MECHANISM FOR MATRIX ROLLING TABLES

Filed Aug. 25, 1922

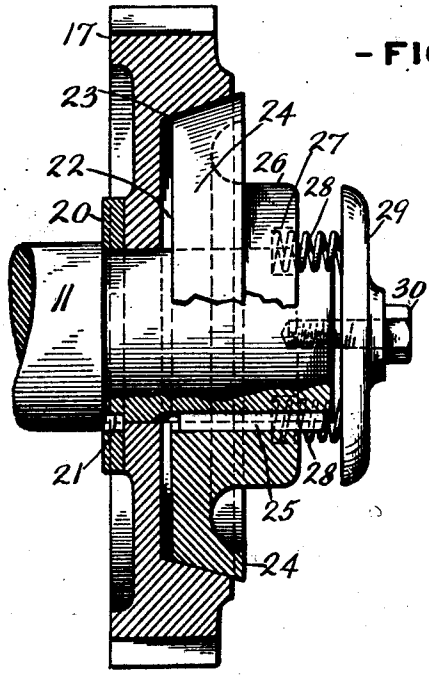
-FIG. 1.-



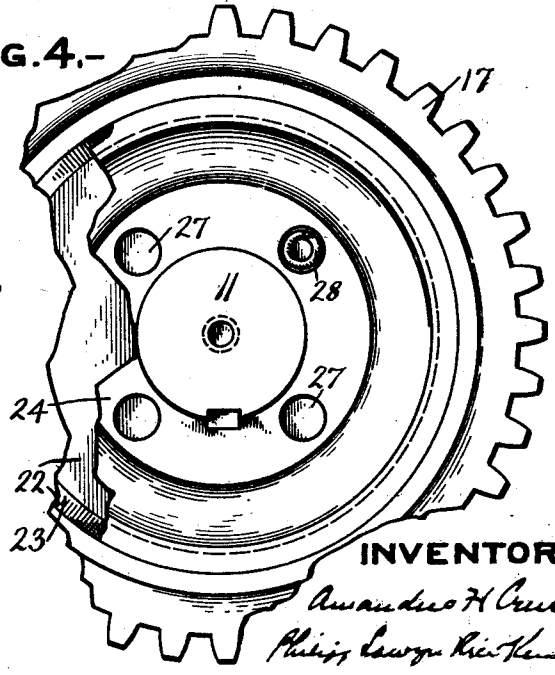
-FIG. 2.-



-FIG. 3.-



-FIG. 4.-



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UNITED STATES PATENT OFFICE.

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DRIVING MECHANISM FOR MATRIX-ROLLING TABLES.

Application filed August 25, 1922. Serial No. 584,166.

This invention relates to certain improvements in driving mechanism for a matrix rolling machine.

In this class of machines there is provided a reciprocating table which forms a support for the chase in which the types are locked. On this chase is placed the matrix into the surface of which it is desired to force the type in the chase to produce the type impression in the matrix, and a blanket over the top of the matrix. The table carrying the chase and matrix is then run between a pair of rolls which act to force the matrix into the type to produce the type impression. It sometimes happens that the operator will accidentally use two blankets, or will use a blanket that is too thick. In this type of machine, furthermore, the pressure of the rolls causes the blanket to creep or wrinkle behind the roll, thus effecting too great a pressure and tending to injure the blanket. When this occurs the resistance in passing through the rolls increases and causes a pressure which is liable to produce a break in the gears driving the rolls.

It is the especial object of this invention to produce a drive for a matrix rolling machine which will yield when subjected to excessive pressure due to too thick blankets or other cause, and thus avoid injury to the mechanism.

With this and other objects not specifically referred to in view, the invention consists in certain novel parts, arrangements and combinations, which will be described in connection with the accompanying drawings and the novel features of which will be pointed out in the claims hereunto appended.

In these drawings—

Figure 1 is a partial broken side view of so much of a matrix rolling machine as is necessary for an understanding of the invention.

Figure 2 is a partial end view of the mechanism shown in Fig. 1.

Figure 3 is a detail sectional view on a somewhat larger scale of the improved clutch mechanism.

Figure 4 is an end view of the construction shown in Fig. 3 with certain of the parts removed.

Referring now to these drawings, the various parts are carried in side frames 1, of any usual or desired form, and in these side frames 1 is arranged to reciprocate a table 2, this table sliding on rolls 3, one of which is shown in Fig. 1. This table acts as a support for the chase, matrix and blanket, which are indicated at 4 in Fig. 1, and the table is arranged to carry the chase, matrix and blanket between a pair of rolls 5 and 6, carried on shafts 11, 12, mounted in bearings 13 carried in the side frames 1, before referred to, these bearings preferably being, as shown, spring seated, the springs being shown at 14, and one of the bearings, as the upper bearing 13 being provided with an adjusting screw 15 for adjusting the pressure which the rolls exert on the article passing therebetween.

One of these rolls, as the roll 6, is a driving roll being driven by means of a gear 16 from any suitable source of power (not shown), this gear driving the other roll 5, through a gear 17 on its shaft 11.

In the construction embodying the invention the table will be reciprocated by the rolls. In the particular construction illustrated, this is effected from the roll 6, this roll being provided with a gear 18 which meshes with a rack 19 carried on the side of the table.

In constructions embodying the invention means will be provided whereby a yield or slip in the driving action of the rolls is provided, so that injury to the gears is avoided if a pressure greater than a predetermined one on the rolls is produced by too thick a blanket. While this may be effected in various ways, in the preferred construction there is provided an automatic clutch mechanism of an improved type which will slip upon such excess of pressure. While the specific structure of the clutch mechanism may be somewhat varied, in the particular construction illustrated, one of the gears, as the gear 17, is loosely mounted on the shaft 11 of roll 5, a washer plate or thrust collar 20 keyed on the shaft 11, as indicated at 21, being employed between that gear and an abutment formed on the shaft, the latter being as shown slightly reduced in diameter to form this abutment. On the opposite side the face of the gear is provided with a recess 22 having bevelled sides 23, the bevel extending outwardly, that is, from the center of the gear toward the outer face thereof. This recess forms a seat for a driving clutch in the form of a cone clutch 24. This cone clutch is keyed on the

shaft 11 by means of a key 25 so as to turn with the shaft and having a sliding movement longitudinally thereof. The outer face of the cone clutch is in the form of a hub 26 in which are provided recesses 27, four such recesses being shown, these recesses forming seats for springs 28, which are tensioned to hold the core into driving engagement with the gear up to a predetermined pressure, this pressure being any desired one for effecting the proper rolling of the matrix into the type chase. These springs at one end are seated in the recesses 27 and at the other end take against an abutment which is in the form of a plate 29 adjustably secured to the end of the shaft 11 by a bolt 30 so that by adjusting the plate the operative tension of the springs may be varied as may be necessary. The action of these springs 28 drives the cone 24 into driving engagement with the gear 17 up to the pressure at which the springs have been adjusted. If now a greater pressure is exerted, the springs will yield and the gear will slip against the face of the cone thereby avoiding a break in the gears or other injury.

It will be observed that the intermeshing gears which drive the rolls are on the same side or end of the roll shafts and that the friction clutch co-operates with one of these gears. This results in the pressure-relieving slip taking place directly at the point where the pressure is to be relieved, that is, at the driving gear, so that the relief takes place very quickly.

It will also be observed that the slip of the gears takes place without affecting the driving operation of the table, the table continuing its driving movement.

While the invention has been shown and described in its preferred form it will be understood that various changes may be made in the specific construction shown and described and that such changes are within the scope of the invention as defined by the appended claims.

What I claim is:

1. In a matrix rolling machine, the combination of a travelling table capacitated to support the chase, matrix and blanket, a pair of pressure rolls, means for driving the table and parts carried thereby between the rolls, shafts for the rolls, a driving gear on one of the shafts, a driven gear on the other shaft, and means for permitting a slip between one of the gears and the shaft while allowing the continued driving movement of the table.

2. In a matrix rolling machine, the combination of a travelling table capacitated to support the chase, matrix and blanket, a pair of pressure rolls, means for driving the table and parts carried thereby between the rolls, shafts for the rolls, a driving gear fast on one of the shafts, a driven gear loosely mounted on the other shaft, and means for connecting the driven gear to its shaft which will permit a slip therebetween while allowing the continued driving movement of the table.

3. In a matrix rolling machine, the combination of a travelling table capacitated to support the chase, matrix and blanket, a pair of pressure rolls between which the table and parts carried thereby are driven, shafts for the rolls, a driving gear on one of the shafts, a driven gear loose on the other shaft, a pinion on the driving gear shaft for driving the table, a clutch connecting the driven gear to its shaft which permits a slip therebetween and allows the driving gear shaft to continue to drive the table.

In testimony whereof, I have hereunto set my hand.

AMANDUS H. CRUSE.