D. L. LESLIE & J. L. HARRIS.

PAPER MAKING MACHINE.

APPLICATION FILED APR. 24, 1913.

1,104,518.

Patented July 21, 1914.

2 SHEETS—SHEET 1.

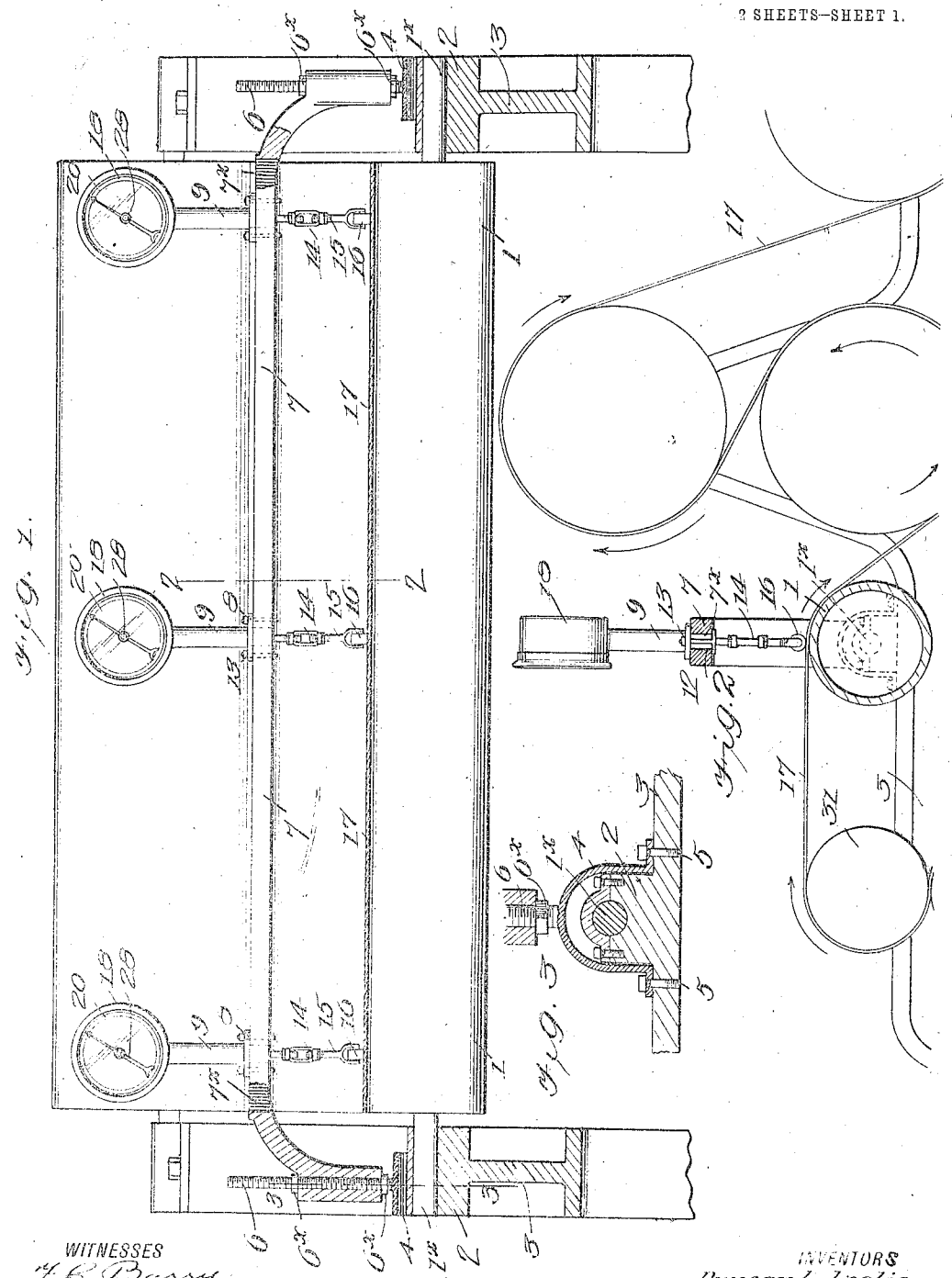


Fig. 1.

Fig. 2.

Fig. 3.

WITNESSES

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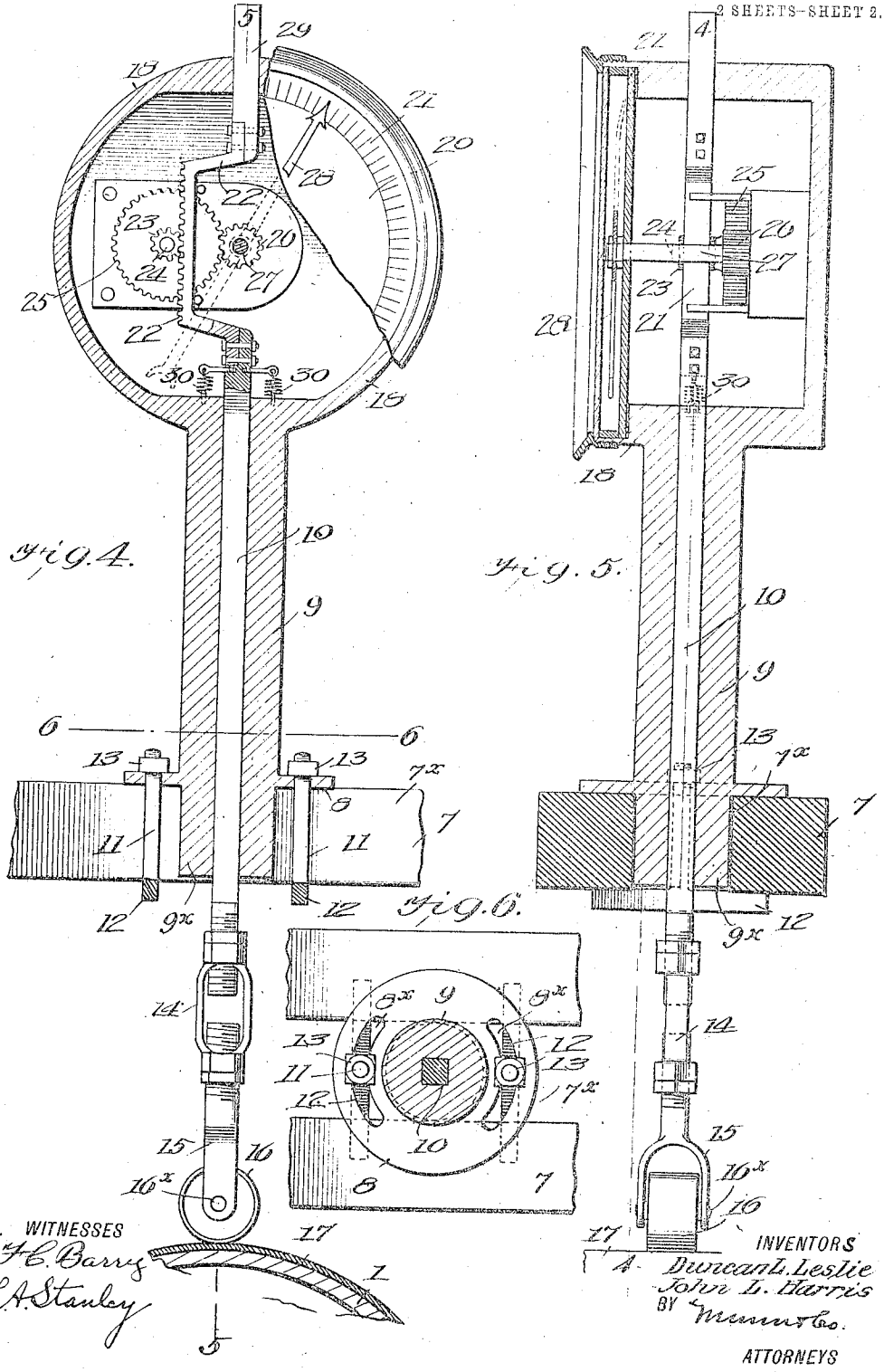
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UNITED STATES PATENT OFFICE.

DUNCAN L. LESLIE AND JOHN L. HARRIS, OF ROANOKE RAPIDS, NORTH CAROLINA.

PAPER-MAKING MACHINE.

1,104,518. Specification of Letters Patent. Patented July 21, 1914.

Application filed April 24, 1913. Serial No. 763,334.

To all whom it may concern:

Be it known that we, DUNCAN L. LESLIE and JOHN L. HARRIS, citizens of the United States, and residents of Roanoke Rapids, in the county of Halifax and State of North Carolina, have made certain new and useful Improvements in Paper-Making Machines, of which the following is a specification.

Our invention relates to improvements in paper making machines, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of our invention is to provide means for measuring or gaging the thickness of a sheet of paper just after it has been formed and when it is still in the wet state before being calendered.

A further object of our invention is to provide a gage which may be turned so as to be readable from various parts of the room in which the machine is situated.

A further object of our invention is to provide means for indicating the thickness of the paper at any desired place.

A further object of our invention is to provide a special form of gage which will register variations of 1/10,000 of an inch in the thickness of the paper.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

Our invention is illustrated in the accompanying drawings forming part of this application in which—

Figure 1 is a section through a portion of the device, the gage being shown in elevation. Fig. 2 is a section along the line 2—2 of Fig. 1. Fig. 3 is a section along the line 3—3 of Fig. 1. Fig. 4 is a vertical section through the gage on the line 4—4 of Fig. 5. Fig. 5 is a section along the line 5—5 of Fig. 4, and Fig. 6 is a section along the line 6—6 of Fig. 4.

In the making of paper, especially where the paper is made in strips of considerable width it is the custom to provide a plurality of feed devices for properly distributing the pulp so as to form sheets of uniform thickness. In the initial run of a mill the finished paper which comes from the calender rolls is measured or gaged and if any particular part of the sheet, such as the center, or a portion toward one edge or the opposite edge, be found thinner or thicker than desirable, more or less of the pulp is fed from that particular feed spout which corresponds with the portion of the sheet to be changed. In mills which employ modern machinery it will be seen that a considerable length of paper is virtually wasted before the pulp feeding devices have been properly regulated. The paper which is not uniform in thickness is generally rejected and only that used which conforms to a certain standard thickness.

An object of our invention is to provide a gaging device which will gage the thickness of the sheet of paper before it has reached the drying rolls so that the proper regulation of the pulp feeding device may be made before the paper has passed over the drying rolls, thereby obviating the loss and delay formerly occasioned.

In carrying out our invention we provide a base roll 1 whose shaft 1^x is mounted in bearings 2 on the main frame 3 of the machine. A yoke 4 is secured to the frame 3 by means of bolts 5 or in any other suitable manner as shown in Fig. 3. This yoke straddles the bearings 2 and is provided with an upwardly extending threaded arm 6. The arms 6 on each side of the machine form, together with the nuts 6^x, supports for a transverse frame 7. The latter is provided with a longitudinal slot 7^x which extends for a distance approximately equal to the width of the sheet of paper to be formed.

Secured to the frame 7 and arranged to be adjusted in any position therealong are a plurality of gage members like those shown in Figs. 4 and 5. A description of one of these gage members will suffice since they are all alike.

In Fig. 4 we have shown the gage as consisting of a base plate 8 arranged to support a central standard 9 which is provided with a central bore arranged to receive a rod 10. The standard 9 has a slightly reduced extension 9^x at its lower end arranged to enter the slot 7^x (see Fig. 6). The plate 8 is provided with a pair of arc-shaped slots 8^x arranged to receive the threaded arms 11 which extend upwardly from integral cross members 12. The latter are disposed beneath the frame 7. Nuts 13 are provided for clamping the standard 9 in position.

The lower end of the rod 10 is threaded to enter one end of a turn buckle 14. A forked rod 15 is threaded to enter the other end of

the turn buckle and bears a roller 16 which is arranged to engage the paper strip 17 as it passes over the base roll 1.

Carried by the standard 9 is a hollow casing 18, which is provided with a dial 20. The latter is divided by means of a graduated scale 21 so as to indicate a difference of 1/10,000 of an inch in the thickness of the paper. The rod 10 is secured to a U-shaped rack member 22, which engages a pinion 23 on a shaft 24. The latter bears a gear 25, which engages 26 on a shaft 27 bearing a hand 28. At the upper end of the U-shaped rack member 22 is a guide stem 29 which projects through an opening in the casing 18 for guiding the rack in its movement. Springs 30 are provided for exerting a downward tension on the rod 10.

From the foregoing description of the various parts of the device the operation thereof may be readily understood.

The paper sheet or band 17 passes from the press roll 31 over the base roll 1 as shown in Fig. 2. Gages such as those described are secured to the frame 7 at various intervals along the frame. In Fig. 1 we have shown three of these gage members, but it will be understood that more or less may be provided without departing from the spirit of the invention. As the paper passes underneath the roller 16 the thickness of the paper will be accurately registered by the gage. The hands 28 of these gages should, of course, register the same thickness, but in case they do not it will be at once apparent to the operator which portion of the sheet should be fed more or less pulp. There is therefore no necessity of completing the drying and calendering of the paper and thus losing the paper which has passed the base roll.

By loosening the nuts 13 the standard 9 may be turned so as to face in any direction so as to be read from different parts of the room. The provision of the turn buckles 14 permits an accurate adjustment of the roller 16 so as to permit the axis 16^{x} of the roller to remain parallel with the axis of the base roll 1 even if the face of the gage should be turned at an angle.

The gages may be shifted along the slot 7^{x} so that any particular portion of the sheet may be gaged. The gage members may be quickly removed or replaced. It will be noted that a very slight movement of the roller will be multiplied by the gearing so that a variation as small as 1/10,000 of an inch may be accurately registered.

We claim:

1. In a paper making device, a frame, a base roll rotatably carried by said frame and arranged to receive a sheet of paper, a gage frame carried by said main frame and arranged to extend above said base roll longitudinally thereof, said gage frame being provided with a longitudinal slot, a plurality of gages carried by said gage frame, each of said gages comprising a hollow standard slidably disposed in the longitudinal slot in said gage frame, a movable rod arranged to extend through said hollow standard, a contact wheel secured to said rod and arranged to engage the paper on the base roll, the axis of the wheel being parallel with the axis of the base roll, means carried by said hollow standard for permitting the rotation of the standard with respect to the gage frame, and means for locking the gage in its rotated position.

2. In a paper making device, a frame, a base roll rotatably carried by said frame and arranged to receive a sheet of paper, a gage frame carried by said main frame and arranged to extend above said base roll longitudinally thereof, said gage frame being provided with a longitudinal slot, a plurality of gages carried by said gage frame, each of said gages comprising a hollow standard slidably disposed in the longitudinal slot in said gage frame, a movable rod arranged to extend through said hollow standard, a contact wheel, a bearing therefor, means connecting said contact wheel bearing with said movable rod, said means permitting the rotation of the bearing about the axis of the rod as a center, means for locking the bearing in its rotated position, and means carried by the hollow standard for permitting the rotation of the standard with respect to the gage frame and for locking it in its rotated position.

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