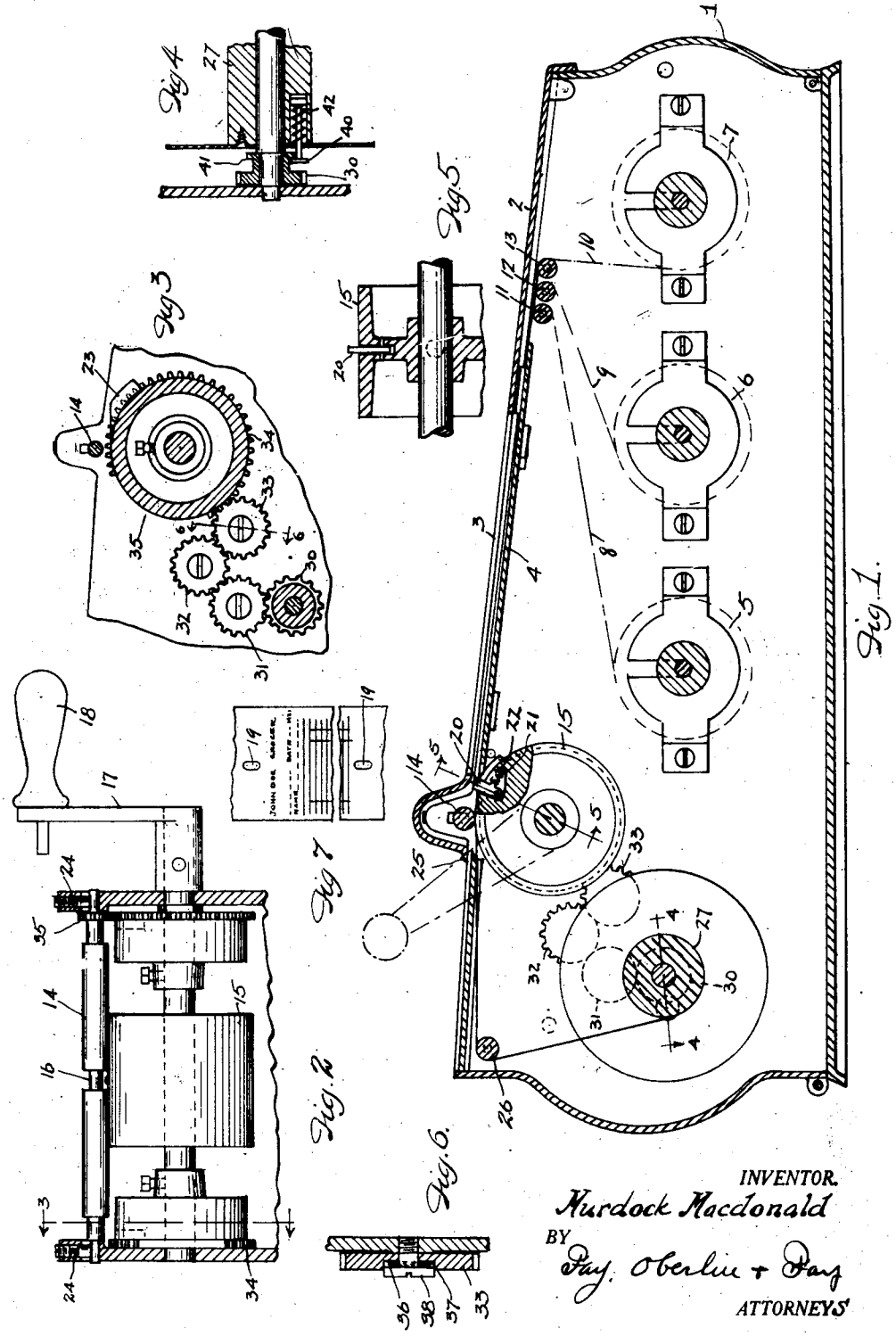
Feb. 26, 1929. 1,703,677

M. MACDONALD

AUTOGRAPHIC REGISTER

Filed April 24, 1922 2 Sheets-Sheet 1



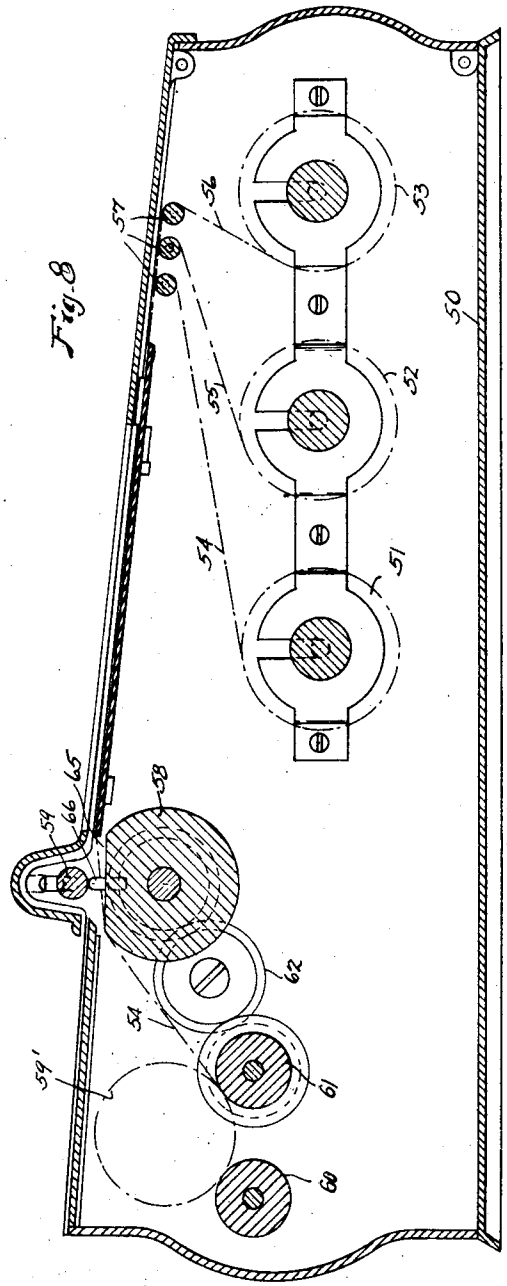
INVENTOR.
Murdock Macdonald
BY
Pay, Oberlin & Pay
ATTORNEYS

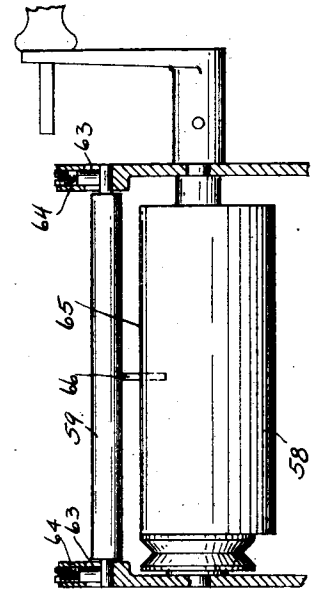
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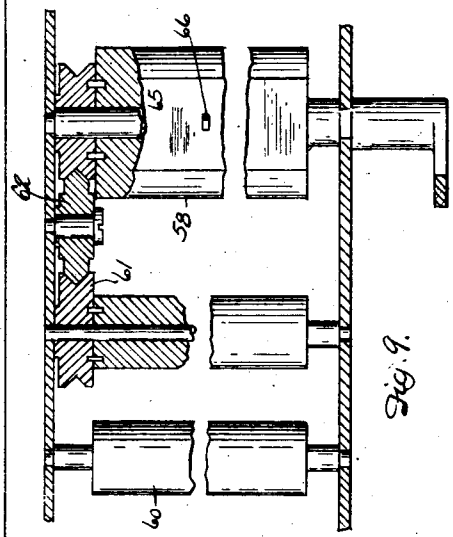
M. MACDONALD

AUTOGRAPHIC REGISTER

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INVENTOR.
Murdock Macdonald.
BY
Fay, Oberlin & Fay
ATTORNEYS

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UNITED STATES PATENT OFFICE.

MURDOCK MACDONALD, OF CLEVELAND, OHIO.

AUTOGRAPHIC REGISTER.

Application filed April 24, 1922. Serial No. 556,291.

The present improvements relate as indicated to autographic registers, but are more particularly directed to an improved means for the feeding and registering of several super-imposed sheets of paper and storing the sheet which is rewound and retained in the machine as a permanent record. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a longitudinal vertical section through my improved machine; Fig. 2 is a front elevation of the paper feeding means; Fig. 3 is a section on the line 3—3 in Fig. 2; Fig. 4 is a section on the line 4—4 in Fig. 1; Fig. 5 is a section on the line 5—5 in Fig. 1; Fig. 6 is a section on the line 6—6 in Fig. 3; Fig. 7 is a plan view of one of the strips; Fig. 8 is a longitudinal vertical section showing a modification of my machine; Fig. 9 is a plan view of the feeding roll and the rolls for operating the storage roll; and Fig. 10 is a side elevation of the main feeding roll.

My machine consists of the usual box-like casing 1 provided with a removable cover 2 which is open at 3, and carries a writing-table support 4, beneath the sheets of paper which pass through the cover at this point, this table 4 serving as a support for the user in making the various memoranda on the sheets as they pass through the machine. The paper is stored on three rolls, 5, 6, and 7, the sheets 8, 9, and 10, which are carried on these rolls passing over separate small idle rollers 11, 12 and 13 respectively, and then passing forwardly over the support 4 and between feed rollers 14 and 15. Sheets of carbon paper are passed between the strips 8 and 9, and 9 and 10, these carbon sheets being carried by any of the usual means.

The feed rolls 14 and 15 are shown in Fig. 2, the lower roll 15 being larger and being relatively short, and mounted centrally with respect to the upper or smaller roller 14 which is provided with a recess 16 at its center. The roll 15 is operated by means of a crank 17 and handle 18, mounted exteriorly of the machine.

The sheets of paper 8, 9 and 10, are provided with registering slots 19 which are adapted to be engaged as these slots pass between the rolls by means of a pivoted finger 20 which is pivotally mounted in the recess 21 in the roll 15, and is normally maintained in the position shown in Fig. 1, by means of a light coiled spring 22. This finger strikes against the slots 19 in the three sheets of paper and moves the sheets into exact registration as they pass over the roll 15, the movement of the sheets being permitted by the lifting of the roll 14 away from the paper during this action. This roll 14 is lifted by means of cams 23, carried on the ends of the shaft of the roll 15, the cams 23 engaging against the ends of the roll 14 and lifting it against the resilient downward pressure of springs 24, which normally maintain the roll 14 in frictional engagement with the paper sheets that are passing beneath them.

The two upper sheets are torn off against an edge 25 which is provided on the cover 2 after they pass between the rolls, the lower sheet being carried forward over an idler 26, and then down to a storage roll 27. This storage roll must of course, be driven and provision must be made for the increasing diameter of the roll, as otherwise, the lower strip of paper would be drawn forward at an increasing speed. The operation of the storage roll is effected through gears 30, 31, 32, 33 and 34, the last named gear being carried on the roll 15. This gear 34 is cut away at 35 in order that there may be no drive of the gear 33, and hence of the storage roll, during a portion of each revolution of the roll 15 and gear 34. This intermission in the operation of the storage roll occurs during the action of the cam 23 and is for the purpose of allowing the finger 20 to center and register the sheets 8, 9 and 10, and to allow these sheets to remain perfectly free for this registration while the upper roll 14 is lifted out of engagement with the paper. This same gear 34 is used to drive a gear 35 which operates the upper roller 14.

In order to maintain the train of gears 30, 31, 32 and 33 at rest during the intermission in their drive, and in order to secure exact engagement between the teeth of the gears 34 and 33, when the driving action is resumed, there is provided a short coiled spring 36 which is mounted in a recess 37 in a gear 33. This gear is mounted on a stud 38, the head of which closes the recess 37 and the spring 36, as one end bears against the stud 38 the

other end bearing against the gear 33. This slight frictional drag on the gear 33 is sufficient to overcome any momentum which has been given to the gear train during its operation and causes the gear train to stop immediately upon the release of the gear 33 by the gear 34. This spring also maintains the gear 33 against any movement until the cut-away portion of the gear 34 has been passed so that exact tooth registration between these two gears will be secured upon the resumption of the drive.

The storage roll 27 is driven from the gear 30 through a plunger 40 which is mounted eccentrically in a recess in the end of the roll 27, and is pressed against a flange 41 on the gear 30, by means of a coiled spring 42 carried in the recess and mounted to press the plunger inwardly as indicated in Fig. 4. The pressure between the plunger 40 and the gear 30 is sufficient to cause rotation of the roll 27 for the purpose of winding the sheet of paper 8 as it comes through the feed roll, but this drive may slip when necessary and is only sufficient to wind the sheet 8 against normal resistance. It is only sufficient to pull the sheet 8 between the feed rolls and in this way the increasing diameter of the storage roller 27 is compensated for so that the stored sheet will never be drawn through the feed rolls at any greater speed than the other sheets.

In Fig. 8 I have shown a machine which in general construction and appearance is similar to the machine of Fig. 1, there being a casing 50 in which are housed three paper supply rollers 51, 52, and 53, from which strips 54, 55, and 56 are led over guide rollers 57 and then forwardly through a main feed roller 58 and a second feed roller 59. After passing through the feed rollers the two uppermost strips of paper 55 and 56 pass out of the machine and are torn off in the usual manner. The lowermost strip 54 passes downwardly into the forward end of the casing and is rolled upon a storage roll 59′. This storage roll rests upon two small rollers 60 and 61 which are spaced from each other, the roller 60 being undriven, while the roller 61 is driven from the feed roller 58. This roll 61 may be driven either by means of a gear in the usual manner or frictionally through the formation of beveled engaging surfaces at the ends of the rolls 58 and 61, which are connected through beveled disk 62 which engages with the beveled surfaces on the rollers 58 and 61. In this manner the rollers 61 is rotated in a counter clock-wise direction and acts to revolve the roller 59′ in a clockwise direction which serves to throw strip 54 forward and to wind it upon this roll. The roller 60 acts merely as a second support for the storage roll 59′ and is of course rotated by the movement of the storage roll.

The above described means for operating the storage roll is not only extremely simple but allows for the increasing diameter of this roll and also obviates the necessity for compensating for this increasing diameter as is necessary where the storage roll is positively driven from the feed rolls.

The roller 59 is mounted in slots 63 and is normally held at the bottom of these slots by means of coiled springs 64 which permit the upward movement of the roller to allow paper to pass between it and the main feed roll 58. The latter is flattened to form a flat surface 65 which is considerably below the lowermost level of the roller 59 and would hence release the grip of these two rollers on the paper when this flattened portion comes directly beneath the position of the roller 59. Mounted in this flattened portion of the roller 58 is a pin 66, the outer end of which projects to the level of the outer surface of the roller if the same were not cut off. That is, this pin 66 comes into exact contact with the roller 59 when the latter is in its lowermost position except for the thickness of the paper sheets therebetween.

The action of this flattened face on the roller 58 and of the pin 66 is substantially identical with the action of the pivoted finger 20 which is shown in Figure 1. When the flattened face on the roller 58 comes beneath the roller 59 the grip on the paper is released and the pin 66 is then able to enter slots formed in the three paper strips and ordinarily in substantial registration, and bring these strips into exact registration by bringing the forward edges of the three slots into exact alignment.

The rotation of pin 66 in the roller 58 maintains these slots in exact alignment until the curved portion of the roller 58 has again passed beneath the roller 59 and cooperated with the latter to again grip the three sheets. The continued rotation of the roller 58 pulls the sheets forward and the pin 66 moves out of the slots in the several strips.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a machine of the character described, the combination of two feed rollers, adapted to operatively engage a plurality of superimposed paper strips passing therebetween, a storage roll adapted to receive and wind one of said strips after passage through said feed rollers, gear means connecting said storage roller with said feed rollers for operation thereby, means automatically releasing the pressure between said feed rollers, and means simultaneously and positively disconnecting

the gear means of said storage roller from said feed rollers.

2. In a machine of the character described, the combination of two feed rollers, adapted to operatively engage a plurality of superimposed paper strips passing therebetween, a storage roll adapted to receive and wind one of said strips after passage through said feed rollers, means consisting of gears connecting said storage roller with said feed roller for operation thereby, a cut-away portion of said gears and means adapted to simultaneously release said feed rollers from their operative relation upon said strips when said cut-away portion renders the drive to said storage roll inoperative.

3. In a machine of the character described, the combination of two feed rollers, adapted to operatively engage a plurality of superimposed paper strips passing therebetween, a storage roll adapted to receive and wind one of said strips after passage through said feed rollers, one of said feed rollers being fixed and the other being movable out of operative relation with the other, gears connecting said fixed feed roller and said storage roll to effect operation of the latter by the former, cams on said fixed feed roller adapted to move said movable feed roller out of operative relation with said fixed roller, and other means adapted to simultaneously disconnect said storage roll from said fixed feed roller during the movement of said movable feed roller.

4. In a machine of the character described, the combination of two feed rollers, adapted to operatively engage a plurality of superimposed paper strips passing therebetween, a storage roll adapted to receive and wind one of said strips after passage through said feed rollers, one of said feed rollers being fixed and the other being movable out of operative relation with the other, gears connecting said fixed feed roller and said storage roll to effect operation of the latter by the former, cams on said fixed feed roller adapted to move said movable feed roller out of operative relation with said fixed roller, one of said gears being mutilated to interrupt the driving of said storage roll by said fixed feed roller during the movement of said movable feed roller.

5. In a machine of the character described, the combination of two feed rollers, adapted to operatively engage a plurality of superimposed paper strips passing therebetween, a storage roll adapted to receive and wind one of said strips after passage through said feed rollers, one of said feed rollers being fixed and the other being movable out of operative relation with the other, gears connecting said fixed feed roller and said storage roll to effect operation of the latter by the former, cams on said fixed feed roller adapted to move said movable feed roller out of operative relation with said fixed roller, one of said gears being mutilated to interrupt the driving of said storage roll by said fixed feed roller during the movement of said movable feed roller, and means tending to maintain said other gears and said storage roll at rest during such interruption of the driving thereof.

6. In a machine of the character described, the combination of two feed rollers, adapted to operatively engage a plurality of superimposed paper strips passing therebetween, a storage roll adapted to receive and wind one of said strips after passage through said feed rollers, one of said feed rollers being fixed and the other being movable out of operative relation with the other, gears connecting said fixed feed roller and said storage roll to effect operation of the latter by the former, cams on said fixed feed roller adapted to move said movable feed roller out of operative relation with said fixed roller, one of said gears being mutilated to interrupt the driving of said storage roll by said fixed feed roller during the movement of said movable feed roller, and a resilient braking means adapted to maintain said other gears and said storage roll at rest during such interruption of the driving thereof.

Signed my me, this 29th day of December, 1921.

MURDOCK MACDONALD.