

Feb. 26, 1935.

W. P. LLOYD

1,992,492

PHOTOCOPY MACHINE

Filed April 3, 1934

4 Sheets-Sheet 1

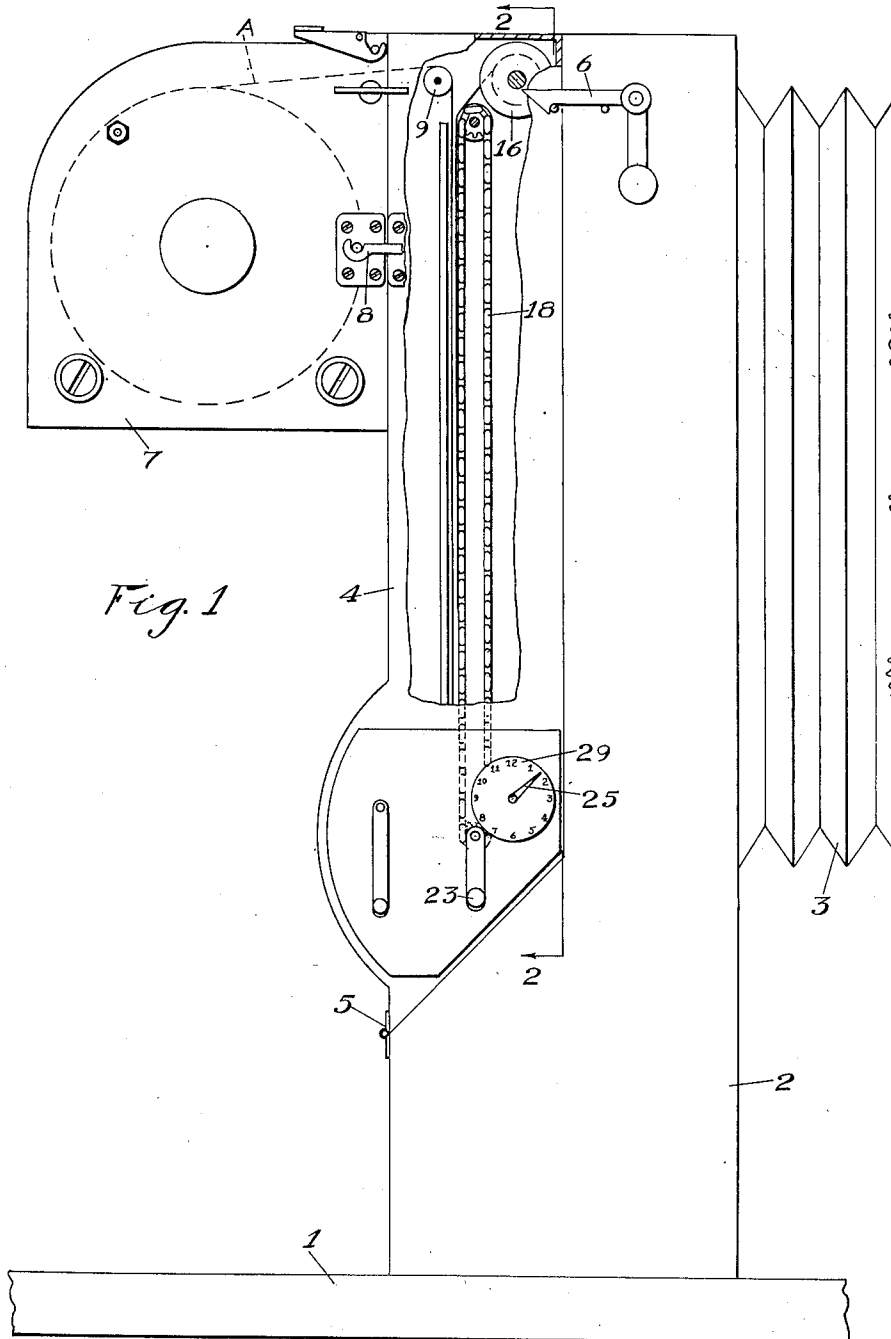


Fig. 1

INVENTOR
Whitten P. Lloyd
BY
Harold E. Stonebraker,
ATTORNEY

Feb. 26, 1935.

W. P. LLOYD

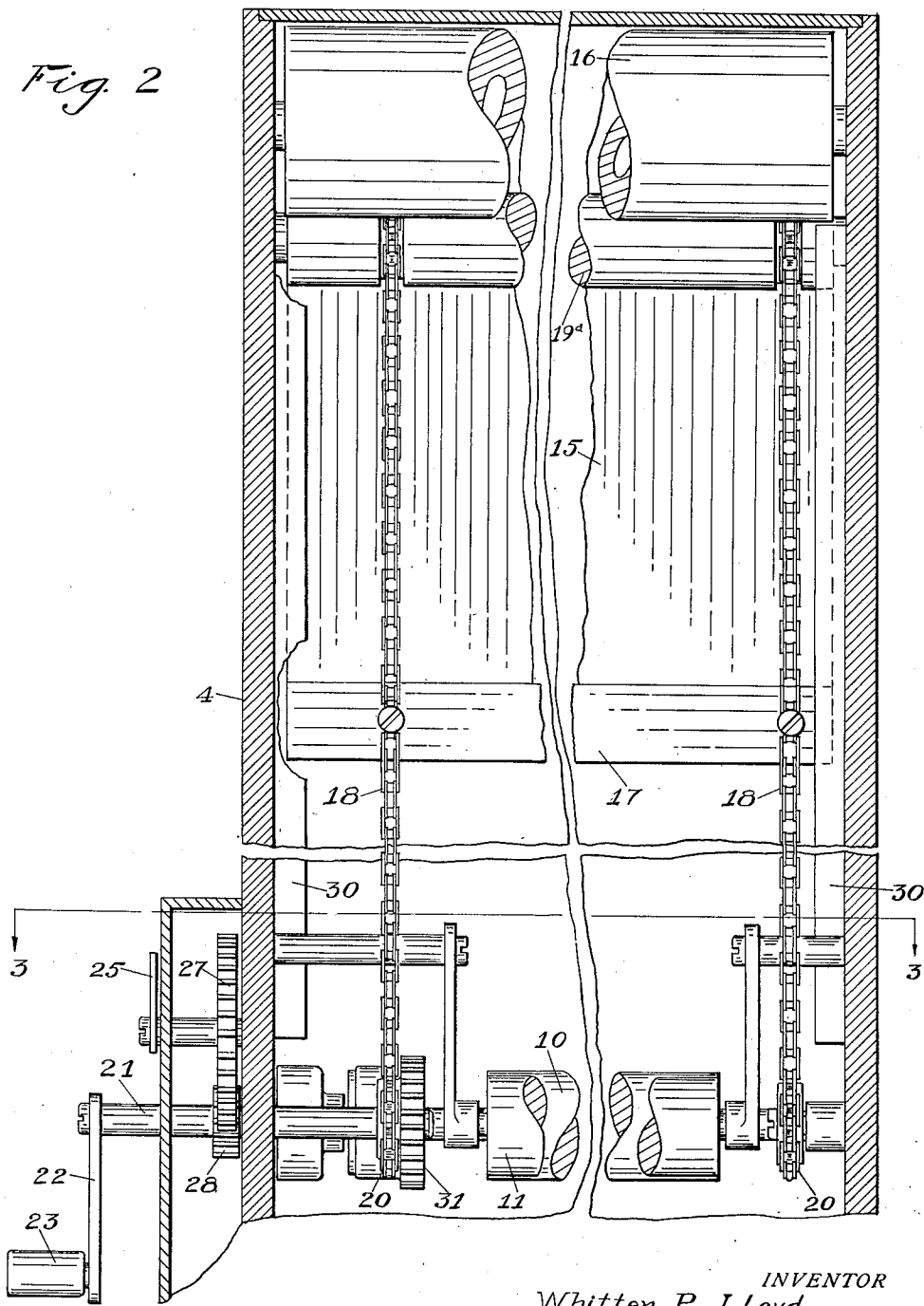
1,992,492

PHOTOCOPY MACHINE

Filed April 3, 1934

4 Sheets-Sheet 2

Fig. 2



INVENTOR

Whitten P. Lloyd

BY *Harold E. Stonebraker*
ATTORNEY

Feb. 26, 1935.

W. P. LLOYD

1,992,492

PHOTOCOPY MACHINE

Filed April 3, 1934

4 Sheets-Sheet 3

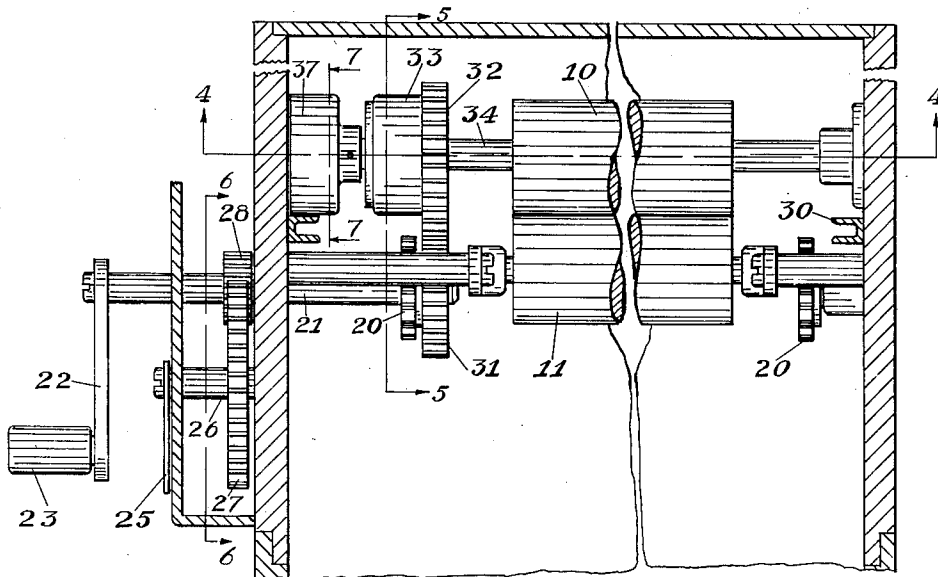


Fig. 3

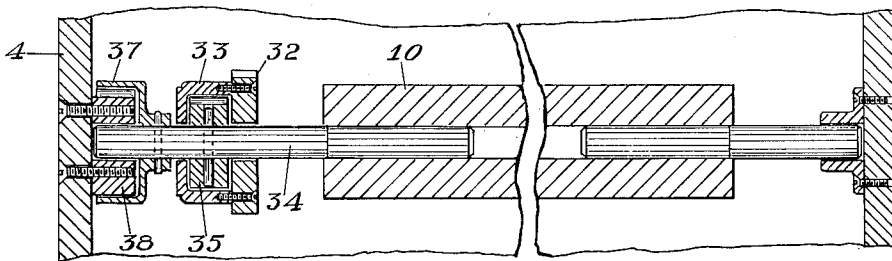


Fig. 4

INVENTOR
Whitten P. Lloyd
BY
Harold L. Stonebraker
ATTORNEY

Feb. 26, 1935.

W. P. LLOYD

1,992,492

PHOTOCOPY MACHINE

Filed April 3, 1934

4 Sheets-Sheet 4

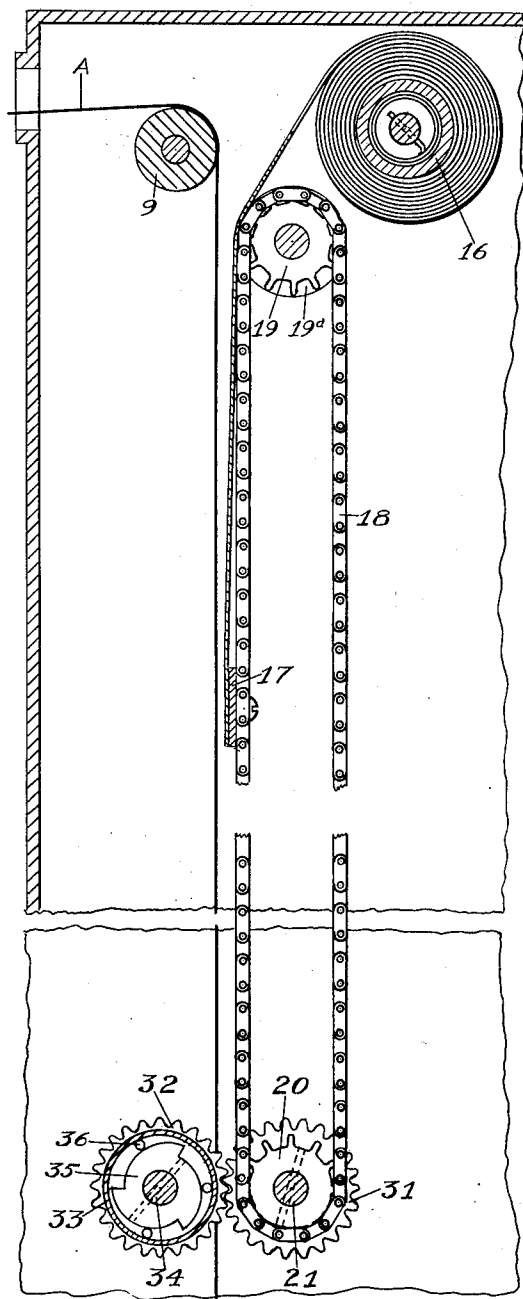


Fig. 5

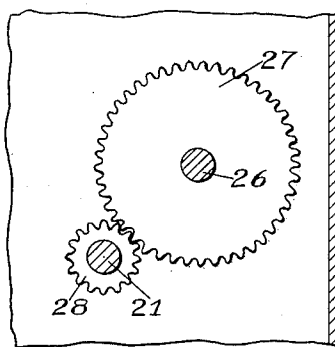


Fig. 6

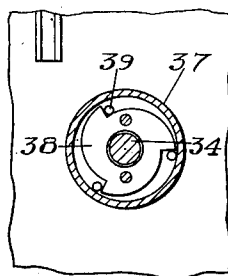


Fig. 7

INVENTOR
Whitten P. Lloyd
BY *Harold E. Stonebraker*
ATTORNEY

UNITED STATES PATENT OFFICE

1,992,492

PHOTOCOPY MACHINE

Whitten P. Lloyd, Rochester, N. Y., assignor to
The Haloid Company, Rochester, N. Y., a cor-
poration of New York

Application April 3, 1934, Serial No. 718,765

4 Claims. (Cl. 95—34)

This invention relates to a photocopy machine of the general type in which copies of documents, drawings, and other records are made on a strip of sensitized paper that is fed from a supporting roll and a portion severed therefrom after each exposure, and has for its object to provide improved mechanism for controlling the amount of paper that is fed and severed in accordance with the size of the portion exposed, thus eliminating waste of paper and increasing the efficiency of the mechanism.

The invention is applicable to machines that employ a movable curtain or mask which is adjustable to vary the size of the exposed portion of sensitized paper, and a more particular object is to establish a relation between the curtain and the paper feeding mechanism such that the position of the curtain for a given exposure governs the amount of paper that is thereafter fed before the severing operation.

To these and other ends, the invention consists in the construction and arrangement of parts that will appear from the following description when read in conjunction with the accompanying drawings, the novel features being pointed out in the claims following the specification.

In the drawings:

Fig. 1 is a side view, with parts broken away, of a photocopy machine incorporating a preferred embodiment of the invention;

Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 3;

Fig. 6 is a detail sectional view on the line 6—6 of Fig. 3, and

Fig. 7 is a detail sectional view on the line 7—7 of Fig. 3.

Referring more particularly to the drawings, in which like reference characters throughout the several views refer to the same parts, 1 designates the usual base or supporting frame, 2 is the camera body, 3 is the bellows, and 4 is the magazine pivoted to the body 2 at 5 and adapted to be held in operative relation to the camera body by means of locking devices 6. 7 is a roll box containing the usual supply of sensitized paper and removably held in operative relation to the magazine by means of fastening devices 8, as disclosed in copending application Serial No. 718,194, filed March 30, 1934.

The sensitized sheet of paper, indicated at A,

is fed from the roll box into the magazine and over a guide roller 9, thence downwardly between the feed roll 10 and the pressure roll 11, see Fig. 3, the feed roll being operated to move the paper downwardly in the manner that will be described hereinafter.

15 designates a curtain or mask, one end of which is secured to a spring controlled roller 16 that has a tendency to wind the curtain thereon, as shown in Fig. 5, while the other end of the curtain is attached to a cross-bar 17, the ends of which are secured to an endless carrier that includes chains 18 guided and travelling around top and bottom sprocket wheels 19 and 20. The sprocket wheels 19 at the top are on a shaft that carries a roll 19^a over which the curtain travels and is guided. One of the bottom sprocket wheels 20 is fixedly mounted on a shaft 21 that extends through the housing and is provided on its outer end with a crank 22 and handle 23, by means of which latter the endless carrier is operated to move the curtain upwardly or downwardly. The friction of the parts is sufficient to overcome the action of the spring roller 16 and hold the curtain in any position to which it is adjusted, and when the endless carrier is operated to move the cross-bar 17 upwardly, the tension of the spring in roller 16 is sufficient to draw the curtain upwardly and maintain it in a taut position.

In order to indicate the position of the curtain or mask and enable the operator to adjust it to any desired point, an indicator 25 is provided on the outside of the housing, the same being mounted on an arbor 26 which carries a gear 27 that is engaged and operated by a pinion 28 fixedly carried by the aforementioned shaft 21 so that whenever the handle 23 is operated to move the curtain, the indicator 25 is correspondingly moved and by its position with relation to the stationary scale 29, the operator can determine the position of the curtain, which is arranged to travel in guides 30.

It is desirable to control the operation of the paper feeding roll 10 so that the amount of paper fed down at any given time is correctly in accord with the position of the curtain when the exposure is made, and this is accomplished in the present structure by establishing operative connections between the curtain operating means and the paper feeding roll so that when the curtain is moved downwardly after an exposure to entirely close the opening, the paper feeding roll is operated a corresponding extent, although the same result can be carried out in other ways

than by the particular mechanism now to be described.

In the structure shown, the shaft 21, which controls the position of the endless carrier to which the curtain is connected, carries a gear 31 that engages and drives a gear 32, the latter being fixedly connected to a housing 33 that is rotatably mounted on the shaft 34 to which is fixed the feed roll 10. The housing 33 is connected to shaft 34 by gravity clutch means that locks the parts together when the gear 32 and housing 33 are turned in a clockwise direction, see Fig. 5, and releases when they are turned in the opposite direction, the purpose of this arrangement being to permit the curtain to be moved upwardly without causing movement of the feed roll. This is accomplished by the clutch member 35 that is fixed on the shaft 34 and clutch rollers 36 which establish a driving connection between the clutch member 35 and the housing 33 when the latter is moved in a clockwise direction, see Fig. 5.

When gear 32 and housing 33 are moved in an anti-clockwise direction, which occurs when the curtain is raised, it is desirable to prevent movement of the feed roll, and to accomplish this, the shaft 34 has fixed thereon a housing 37 which cooperates with a clutch element 38 that is fixedly secured to the frame of the machine, the friction rollers 39 acting to establish a locking connection between the stationary clutch member 38 and the housing 37 when the latter is moved in a clockwise direction, see Fig. 7.

In the operation of the machine, preceding an exposure, the operator turns handle 23 to move the curtain bar 17 and the curtain 15 upwardly to obtain any desired size of exposure opening, and during this upward movement, of the curtain, there is no movement of the paper feed roll 10, the latter being locked by the clutch element 38 against reverse movement, as previously described, while housing 33 turns freely on the shaft 34. After the exposure is completed, the operator turns the handle 23 in the opposite direction, winding the curtain down until it reaches the bottom limit of its movement and is stopped by the cross-bar 17 engaging the gears. During such downward movement of the curtain, the housing 33 is locked to the shaft 34 through the gravity clutch already described, and effects a corresponding turning movement of the feed roll 10 and feeding the paper a proper amount in accord with the size of the exposure

opening. The paper is then severed in the usual manner in this class of machinery.

While the invention has been described with reference to certain details of construction, it is not confined to the particular arrangement shown, and this application is intended to cover any modifications or departures coming within the purposes of the improvement or the scope of the following claims.

I claim:

1. In a photocopy machine, the combination with an adjustable curtain and curtain operating means, paper feeding mechanism, the curtain being operated to open position while the paper is stationary and the paper being fed while the curtain is returned to closed position, of devices controlled by the curtain operating means acting automatically to operate the paper feeding mechanism to an extent dependent on the position of the curtain when open.

2. In a photocopy machine, the combination with an adjustable curtain and curtain operating means, paper feeding mechanism, the curtain being operated to open position while the paper is stationary and the paper being fed during return of the curtain to closed position, of operative connections between the curtain operating means and the paper feeding mechanism acting automatically to drive the paper feeding mechanism during downward movement of the curtain to closed position, the paper feeding mechanism being ineffective during upward movement of the curtain to open position.

3. In a photocopy machine, the combination with a curtain, a spring roller to which one end of the curtain is connected, an endless carrier to which the other end of the carrier is connected, actuating means for the endless carrier, paper feeding mechanism, and operative connections between the paper feeding mechanism and said carrier actuating means including an automatic clutch member whereby the paper is automatically fed during downward movement of the curtain and its feeding mechanism is automatically released during upward movement of the curtain.

4. In a photocopy machine, the combination with an adjustable curtain and paper feeding mechanism which operates to feed the paper during return of the curtain to closed position, of means automatically controlled by the position of the curtain when open for limiting movement of the paper feeding mechanism.

WHITTEN P. LLOYD.