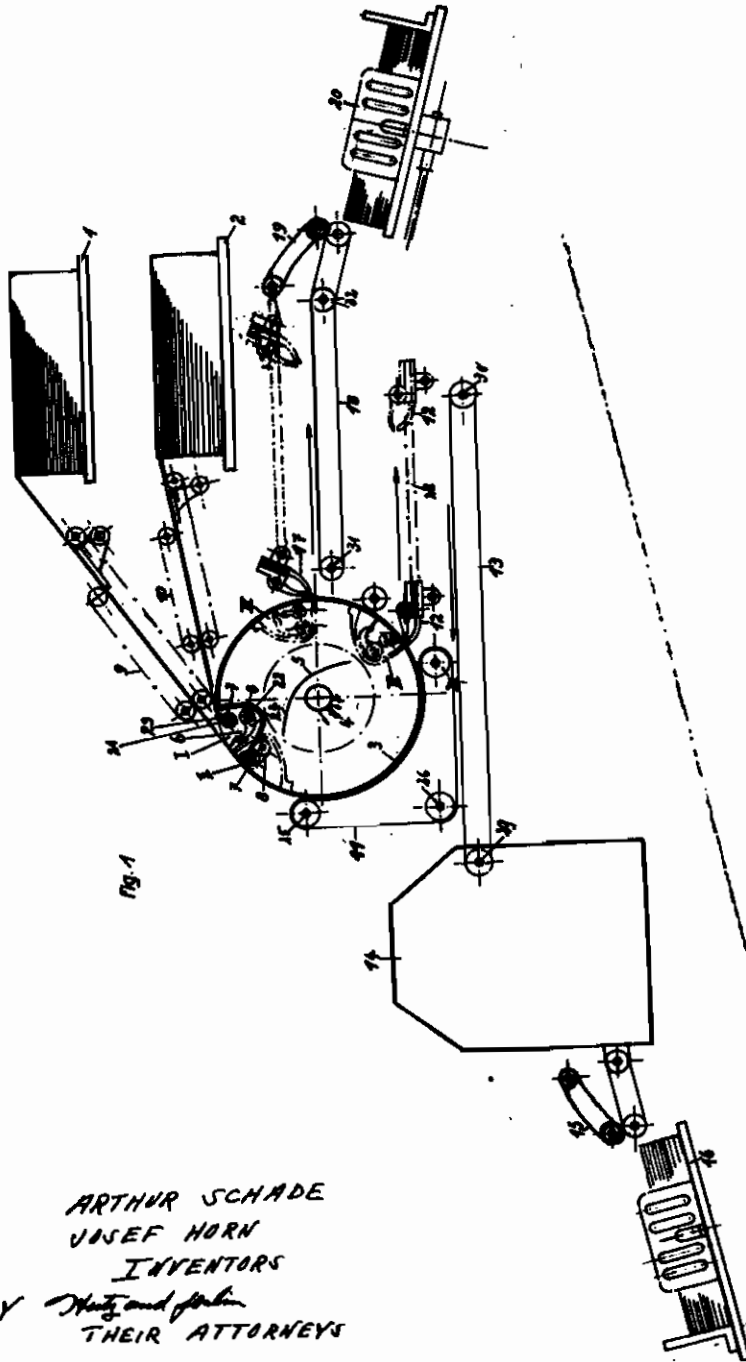


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AUTOMATIC PHOTOPRINTING DEVICE
Filed May 27, 1941

Serial No.
395,422
2 Sheets—Sheet 1



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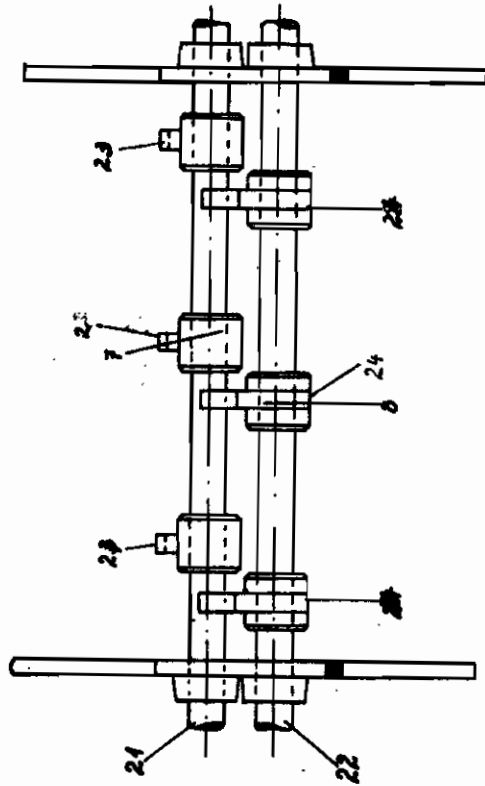
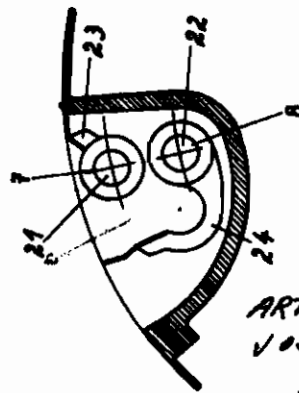


Fig. 2



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ALIEN PROPERTY CUSTODIAN

AUTOMATIC PHOTOPRINTING DEVICE

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Application filed May 27, 1941

A serious drawback of the exposure devices and of the combined exposure and developing devices generally used for preparing photoprints consists in that each original to be copied and each photoprinting material, respectively, must be separately supplied by hand to the exposure device. This supply must be carried out very carefully and requires great skill. Moreover, the known devices have the further disadvantage that the originals and the photoprints after the exposure and the development, respectively, are delivered rather irregularly to the collecting troughs so that they must be sorted thereafter. The known devices, therefore, require a large staff of operators whereby the working process is rendered very expensive.

The present invention concerns a photoprinting device which by automatic operation avoids the above mentioned drawbacks. The photoprinting device which is the object of the present invention and which advantageously is constructed so as to form a combined exposure and developing device may be fed at a time with a whole pile of originals as well as with a pile of photoprinting paper. The device works these piles off automatically and copies one original after the other. A preferred type of the new device is constructed so that the copies and the finished photoprints after exposure and development, respectively, are delivered in two piles in exactly the same order in which the pile of originals was supplied to the device. Such devices need only a very small attendance. Several of these machines can be controlled by one person only whereas each of the machines hitherto known required one or even several operators. It is obvious that the new device is of great importance particularly in case a set of drawings which belong together, which refer for instance to a certain machine, and which are arranged in a definite order are to be copied several times and to be obtained again in the form of piles in the same order. Such tasks have often to be accomplished in technical offices.

The photoprinting device according to the present invention comprises an exposure-cylinder capable of being turned and is characterized by two sheet feeding devices known as such from rotary printing machines which feed the exposure cylinder with the originals and the photoprinting material from two piles of these materials disposed at two different places. The sheet feeding devices are arranged and coupled with the motive mechanism of the exposure cylinder in such a manner that they first lead the original automati-

cally to a certain place of the revolving cylinder and that, after the cylinder has revolved somewhat further, they conduct the photoprinting material to the same place of the cylinder. At the said place of the cylinder, the original and the photoprinting material, respectively, are held at their fore-edges by a double claw or a device of similar action which also works automatically and is coupled with the motive mechanism of the cylinder. The double claw is constructed so that with one of its holding devices it holds the original and with the other it holds the photoprinting material and, after the exposure, releases both sheets one after the other. This operation is repeated at the next revolution of the cylinder.

Advantageously a transportation device is provided which carries the original, released by the double claw, to an ejector from which it is delivered to a stapler. In a corresponding manner the photoprinting material, released by the double claw, is carried by another transportation device to an ejector which, likewise, delivers it to a stapler. Before arriving at the ejector, the photoprinting material advantageously passes through a developing device.

Fig. 1 of the annexed drawings diagrammatically represents as a whole the device which is the object of the present invention. 1 is a table on which the light-sensitive paper may be placed in the form of a pile. 2 is a further table on which the originals to be copied may be placed in the form of a pile of regular order. 3 is an exposure-cylinder capable of being turned with inserted curved glass panes. In its interior there are mounted a source of light 4 and the reflector 5. Preferably these two elements are stationary. On the cylinder a double claw 6 is mounted which is represented in the drawing in its four working phases (phase I in full lines, phases II—IV in dotted lines). This double claw comprises two holding devices 7 and 8, the first of which serves to hold the originals at the exposure cylinder and the latter of which serves to hold the photoprinting material. 9 and 10 are two sheet-feeding devices of known kind which convey the light-sensitive paper and the originals to the exposure cylinder. The two feeding devices are arranged so that, supposing the cylinder being stopped, they would deliver the prints and the originals, respectively, to two different places of the cylinder which are, however, rather near each other. 11 is a conveying belt travelling over several rollers 25, 26 and 27 which, during the exposure, firmly presses the original and the light-sensitive paper against the exposure cyl-

inder. 12 is a withdrawing claw, likewise represented in two phases (phase I in full lines, phase II in dotted lines) which serves to lead the exposed photoprinting papers to the endless conveyer 13 which travels round rollers 29 and 30. 28 is a chain on which the said claw is mounted. 14 is the developing device. Since such devices are generally known, the device is not fully illustrated in the drawing. In the case diazo photoprinting papers are used, for instance a device for developing photographic prints by means of ammonia of the kind described in US patent No. 2,075,306 may be used. 15 is an ejector of known kind which leads the prints emerging from the developing device to the stapler 16 which is also known as such. 17 is a further claw, represented in two phases, which draws the original, after exposure, to the conveying belt 18 travelling round rollers 31 and 32 from where it is conducted by ejector 19 to the stapler 20.

The different members of the machine which have been mentioned and their driving means which have not been shown are coupled by means of cam discs and other suitable elements in such a manner—known from the construction of printing machines and automatons—that they co-act as follows:

When the exposure cylinder 3 is revolving and claw 6 whose two holding devices are at first open has been brought into position I an original is conducted by feeding—device 10 to the cylinder. This original is seized at its fore-edge by the holding device 7 of the claw which closes. As soon as the exposure cylinder has arrived at position II, a photoprinting paper is led to the cylinder by feeding device 9. This paper is seized by the holding device 8 of the claw. During the further revolution of the cylinder the copying

material is pressed against the exposure cylinder by means of conveying belt 11 and the exposure takes place. When the claw has arrived at position III, the holding device 8 opens again so that the photoprinting paper is released. It is then seized by withdrawing claw 12. By the fact that claw 12 moves to the position which is drawn in dotted lines and then opens, the photoprinting material is led to conveying belt 13 which moves in the direction indicated by the arrow and carries it to the developing device 14. After having passed therethrough, the paper is delivered by ejector 15 to stapler 18. When the exposure cylinder has revolved further and the double claw has taken the position IV, holding device 7 also opens and the original is released. By means of withdrawing claw 17, conveying belt 18 and ejector 19 it is conducted to stapler 20. In this way it is possible to obtain from a staple of originals arranged in a certain order a staple of prints arranged in the same order. At the same time, the originals are returned in the form of a pile of regular order so that, if desired—in case several prints are to be made from each original—the whole staple can be placed again on table 2 without being sorted prior thereto.

Fig. 2 diagrammatically represents the double claw which consists of two holding devices 7 and 8 arranged in a trough of the exposure cylinder. Each of these devices consists of a shaft (21 and 22) on which fingers 23 and 24 are arranged which end in resilient sheet metal strips. According to the position of the shafts the sheets of paper supplied are held by the devices (position of device 7 as drawn) or released by the devices (position of the device 8 as drawn).

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